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Population-Based Microcephaly Surveillance in the United States, 2009 to 2013: An Analysis of Potential Sources of Variation

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Background: Congenital microcephaly has been linked to maternal Zika virus infection. However, ascertaining infants diagnosed with microcephaly can be challenging. **Methods:** Thirty birth defects surveillance programs provided data on infants diagnosed with microcephaly born 2009 to 2013. The pooled prevalence of microcephaly per 10,000 live births was estimated overall and by maternal/infant characteristics. Variation in prevalence was examined across case finding methods. Nine programs provided data on head circumference and conditions potentially contributing to microcephaly. **Results:** The pooled prevalence of microcephaly was 8.7 per 10,000 live births. Median prevalence (per 10,000 live births) was similar among programs using active (6.7) and passive (6.6) methods; the interdecile range of prevalence estimates was wider among programs using passive methods for all race/ethnicity categories except Hispanic. Prevalence (per 10,000 live births) was lowest among non-Hispanic Whites (6.5) and highest among non-Hispanic Blacks and Hispanics (11.2 and 11.9, respectively); estimates followed a U-shaped distribution by maternal age with the highest prevalence

among mothers <20 years (11.5) and ≥40 years (13.2). For gestational age and birth weight, the highest prevalence was among infants <32 weeks gestation and infants <1500 gm. Case definitions varied; 41.8% of cases had an HC ≥ the 10th percentile for sex and gestational age. **Conclusion:** Differences in methods, population distribution of maternal/infant characteristics, and case definitions for microcephaly can contribute to the wide range of observed prevalence estimates across individual birth defects surveillance programs. Addressing these factors in the setting of Zika virus infection can improve the quality of prevalence estimates.

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Key words: microcephaly; surveillance; prevalence; head circumference

Introduction

Since the first reports of an increased number of infants born with microcephaly in Brazil in September 2015, great strides have been made in characterizing the causal

relationship between Zika virus infection during pregnancy and congenital microcephaly, as well as other serious brain abnormalities (Rasmussen et al., 2016; Schuler-Faccini et al., 2016). This work emphasized the value of

Additional Supporting information may be found in the online version of this article.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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comprehensive population-based surveillance data on these defects. The National Birth Defects Prevention Network (NBDPN) was established in 1997 with the mission of improving population-based surveillance of birth defects in the United States (<http://www.nbdpn.org>). Since 2000, the NBDPN has released annual reports containing state-specific, population-based data on the prevalence of major birth defects; however, ascertaining infants with microcephaly can present challenges for birth defects surveillance programs.

To illustrate, the prevalence of microcephaly for the years 2006 to 2010 estimated by surveillance programs included in the NBDPN Annual Report 2013 ranged from 0.5 to 19.0 per 10,000 live births (Mai et al., 2013). Differences in the clinical definition of microcephaly, the timing and setting of diagnosis, case ascertainment methods, and other factors may have contributed to this wide variation in observed prevalence. For these reasons, microcephaly was dropped from the list of defects requested in the NBDPN Annual Report in 2014 (Mai et al., 2014), but many programs have continued to monitor its prevalence.

The purpose of this report is to describe the estimated prevalence of microcephaly in the United States from 2009 to 2013 using data from thirty population-based birth defects surveillance programs and to explore potential reasons for some of the observed variation in prevalence.

BACKGROUND ON MICROCEPHALY

Microcephaly is the clinical finding of a small head when compared with infants of the same sex and age, or gestational age if measured at birth. The head circumference (HC), also known as the occipitofrontal circumference, is used to assess the volume of the underlying brain (Bray et al., 1969; Cooke et al., 1977). Measurements of HC are compared with standard references and described in terms of percentiles or SDs above or below the mean for the reference population. Clinicians can differ in the reference value they use as the threshold for defining microcephaly or as a trigger for evaluation of an infant for an underlying abnormality. Commonly used thresholds are less than 3rd percentile or more than 2 SD below the mean. Other thresholds used are less than the 5th or 10th percentiles, or more than 3 SDs below the mean (Opitz and Holt, 1990; Raymond and Holmes, 1994; Ashwal et al., 2009). Complicating classification further is that measurement of HC in the newborn or young infant can be inaccurate due to molding of the head following vaginal birth, infant movement, use of tapes that measure only to the nearest half centimeter, and other factors. It is critical to assess head growth, and thus growth of the brain, routinely throughout childhood (Holden, 2014). Microcephaly is confirmed when repeated HC measurements over time remain smaller than expected, or become progressively smaller, compared with infants of the same sex and age.

While the finding of a small HC may suggest an abnormality in the underlying brain, it does not confirm an

abnormality or define its nature. Some infants who are constitutionally small overall will have an HC below a given threshold without any underlying brain abnormality. Others may have a small HC due to limitations on growth in utero that are unrelated to brain structure or function. Microcephaly is disproportionate when the HC is small in proportion to infant length and weight, which may be normal for sex and age; or proportionate when the HC, length, and weight are all small for the infant's sex and age, but proportional to each other (Leviton et al., 2002). In congenital microcephaly, the decreased HC is present prenatally or at the time of delivery. However, microcephaly can be acquired postnatally due to a delivery complication or a subsequent insult, such as infection or trauma (Baxter et al., 2009; von der Hagen et al., 2014). In addition, microcephaly that is due to a genetic syndrome may not be present at birth but develop postnatally.

Although most cases of congenital microcephaly have unknown etiology, some causes of congenital microcephaly have been identified (Ashwal et al., 2009). Microcephaly is a known component of some chromosomal abnormalities and single gene disorders (Opitz and Holt, 1990). It is a component of fetal alcohol syndrome and a manifestation of several congenital infections (e.g., cytomegalovirus, toxoplasmosis, and rubella). Congenital microcephaly has been associated with other exposures or conditions including placental insufficiency in utero, poorly controlled maternal diabetes, high levels of radiation exposure, and in utero exposure to the medication hydantoin. The clinical implications, natural history, and developmental potential for infants with microcephaly vary depending on the cause and severity.

Taken together, variations in how microcephaly is defined, the existence of different types, the timing of diagnosis, and the accuracy of gestational age estimates at birth can contribute to variation in the reported prevalence of microcephaly. Microcephaly surveillance is particularly challenging when programs use different methods in terms of the settings where cases are identified (e.g., birth hospitals only, birth and pediatric hospitals, out-patient specialty clinics) and the maximum age at which affected children are ascertained (e.g., newborn only, up to 1 year, up to 3 years). For many programs, limitations on types of data sources and time period for case ascertainment and follow-up are critical. However, the recent increased focus on microcephaly as a consequence of congenital Zika virus infection has led to heightened interest in re-examining the epidemiologic characteristics of microcephaly and improving case ascertainment of this condition.

Materials and Methods

The NBDPN issued a call to state and territorial birth defects surveillance programs for data on infants born from 2009 to 2013 who have a diagnosis of microcephaly (see Supplementary Materials, which are available online).

A total of thirty programs provided data. Typically, cases were identified by the presence of an ICD-9-CM hospital discharge code for microcephaly or mention of microcephaly in the medical record regardless of the HC size. One program was known to have required that the HC measurement be less than the 3rd percentile by sex and gestational age for inclusion in the surveillance. Data provided for each case included the year of birth, maternal race/ethnicity and age at delivery, infant sex, gestational age, birth weight, and plurality. Eight programs also provided information on the specific HC measurement or value of the HC percentile for each case; a ninth provided the number of cases within categories of HC percentiles. These nine programs also included data on the infant's age at the time of the first HC measurement ascertained by the surveillance program, whether the certainty of the microcephaly diagnosis was considered confirmed (definite) or questionable (possible/probable), and the presence of additional conditions that might contribute to microcephaly.

Participating programs were divided into those with active case finding methods and those with passive case finding methods. Generally, in active case finding, children with birth defects are identified through review and abstraction of medical records at data sources, which may include birth and pediatric hospitals, prenatal diagnostic offices, subspecialty offices and other sources; in passive case finding, children with birth defects are identified and reported to the program from administrative datasets at the sources. Some passive programs verify reported diagnoses through subsequent medical record review. Maternal race/ethnicity was categorized as: non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic Asian or Pacific Islander, and non-Hispanic American Indian or Alaskan Native, other, and unknown. Infants identified as being of more than one race were bridged to a single race category using data from the National Center for Health Statistics, when available.

When these bridged data were not available, infants of more than one race were assigned to the category of other and unknown race. Maternal age at delivery was categorized as less than 20 years, 20 to 24 years, 25 to 29 years, 30 to 34 years, 35 to 39 years, 40 or more years, and unknown. Gestational age was categorized as term (37 weeks or greater), preterm (32–36 weeks), very preterm (less than 32 weeks), and unknown. Birth weight was categorized as normal (2500 gm or more), low (1500–2499 gm), very low (less than 1500 gm), and unknown. Plurality was categorized as singleton, twin, triplet or higher multiple, and unknown.

The percentile for each newborn HC value from the eight programs that provided these data was calculated using the INTERGROWTH-21st international standards for newborn weight, length, and head circumference by gestational age and sex (available at: <https://intergrowth21.tghn.org/articles/international-standards-newborn-weight-length-and-head-circumference-gestational-age-and-sex-newborn-cross-sectional-study-inte/>). The INTERGROWTH-21st

standards include reference values for term, preterm, and very preterm newborns. The percentile for each HC value taken beyond the birth hospitalization from the programs that provided these data was calculated using the World Health Organization Child Growth Standards (available at: http://www.who.int/childgrowth/standards/hc_for_age/en/). For those cases where HC measurements were not available (less than 1% of cases), the percentile values provided by the state programs were used. Percentiles for HC were categorized as less than 3rd percentile, 3rd to less than 5th percentile, 5th to less than 10th percentile, and greater or equal to 10th percentile. Percentiles for HC were not calculated for infants less than 24 weeks gestation or greater than 42 weeks gestation because reference standards for these infants were not available through INTERGROWTH-21.

Additional conditions that might contribute to microcephaly included other birth defects (neural tube defects, holoprosencephaly, craniosynostosis, and conjoined twins), chromosomal abnormalities and/or clinical syndromes (including fetal alcohol syndrome), and non-Zika in utero infections. All chromosomal abnormalities, clinical syndromes, and in utero infections were included as possibly contributing regardless of whether they were known to be associated with microcephaly. Cases with more than one additional contributing condition were included in each category for which they had a condition.

STATISTICAL ANALYSIS

Data were pooled across thirty programs and the unadjusted prevalence of microcephaly was estimated as the number of reported cases divided by the total live birth population from the corresponding time period overall and by maternal and infant characteristics (Mason et al., 2005). The 95% confidence intervals (CIs) around all prevalence estimates were calculated using the Clopper-Pearson method (Clopper and Pearson, 1934). Prevalence estimates for microcephaly by plurality and gestational age categories (estimates by gestational age category were restricted to singleton infants only) were also stratified by maternal race/ethnicity. To assess variability in the prevalence of microcephaly across programs, the mean, median, interquartile (25th to 75th percentile) and interdecile (10th to 90th percentile) ranges were calculated overall, by case finding methodology (active, passive), and by race/ethnicity. A similar analysis was performed for HC percentiles with the mean, median, interquartile and interdecile ranges calculated by gestational age category.

Results

In Table 1, the counts, unadjusted prevalence estimates, and 95% CIs for microcephaly are presented using pooled data for 2009 to 2013 from all 30 participating birth defects surveillance programs. The total surveillance population covered over 11 million live births during this time period. The pooled unadjusted prevalence for

TABLE 1. Microcephaly Counts,^a Prevalence per 10,000 Live Births, and 95% CIs for 30 Birth Defects Surveillance Programs,^b 2009 to 2013

	Cases		Live births		Prev	95% CI
	<i>n</i>	(%)	<i>n</i>	(%)		
Total cases	9,678	(100.0)	11,110,665	(100.0)	8.7	8.5-8.9
Maternal race/ethnicity						
Non-Hispanic White	3,856	(39.8)	5,973,376	(53.8)	6.5	6.3-6.7
Non-Hispanic Black	1,972	(20.4)	1,758,491	(15.8)	11.2	10.7-11.7
Hispanic	3,071	(31.7)	2,585,605	(23.3)	11.9	11.5-12.3
Non-Hispanic Asian or Pacific Islander	429	(4.4)	566,353	(5.1)	7.6	6.9-8.3
Non-Hispanic American Indian or Alaska Native	54	(<1.0)	51,646	(<1.0)	10.5	7.9-13.6
Maternal age (years)						
<20	1,094	(11.3)	955,420	(8.6)	11.5	10.8-12.1
20-24	2,506	(25.9)	2,608,005	(23.5)	9.6	9.2-10.0
25-29	2,487	(25.7)	3,142,705	(28.3)	7.9	7.6-8.2
30-34	2,010	(20.8)	2,765,901	(24.9)	7.3	7.0-7.6
35-39	1,089	(11.3)	1,312,477	(11.8)	8.3	7.8-8.8
40+	426	(4.4)	322,730	(2.9)	13.2	12.0-14.5
Infant sex						
Male	4,288	(44.3)	5,685,094	(51.2)	7.5	7.3-7.8
Female	5,371	(55.5)	5,425,361	(48.8)	9.9	9.6-10.2
Gestational age						
Term birth (37+ weeks)	6,200	(64.1)	9,960,699	(89.6)	6.2	6.1-6.4
Preterm birth (32 - 36 weeks)	2,271	(23.5)	933,452	(8.4)	24.3	23.3-25.4
Very preterm birth (<32 weeks)	1,088	(11.2)	187,601	(1.7)	58.0	54.6-61.5
Birth weight						
Normal birth weight (2,500+ grams)	5,115	(52.9)	10,169,612	(91.5)	5.0	4.9-5.2
Low birth weight (1,500-2,499 grams)	3,140	(32.4)	760,346	(6.8)	41.3	39.9-42.8
Very low birth weight (<1,500 grams)	1,243	(12.8)	167,771	(1.5)	74.1	70.0-78.3
Plurality						
Singleton	9,130	(94.3)	10,715,456	(96.4)	8.5	8.3-8.7
Twin	455	(4.7)	378,151	(3.4)	12.0	11.0-13.2
Triplet or higher	27	(<1.0)	15,645	(<1.0)	17.3	11.4-25.1

^aCategories of missing/other/unknown are not shown.^bStates and territories with surveillance programs contributing to the table: Arkansas, Colorado, Delaware (2009-2012), Florida, Georgia (Metropolitan Atlanta), Hawaii (2012), Illinois, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Oregon, Puerto Rico (2013), Rhode Island, South Carolina, Texas, Utah, West Virginia, Wisconsin

Prev, prevalence; CI, Confidence Interval.

microcephaly was 8.7 per 10,000 live births (95% CI, 8.5–8.9), or approximately 1 in 1150 births.

MATERNAL AND INFANT CHARACTERISTICS

Prevalence estimates for microcephaly (per 10,000 live births) were lowest among non-Hispanic Whites (6.5) and non-Hispanic Asian or Pacific Islanders (7.6), and highest

among non-Hispanic Blacks (11.2) and Hispanics (11.9). Prevalence estimates (per 10,000 live births) by maternal age followed a U-shaped pattern with the highest estimates observed in the youngest (less than 20 years) and oldest (40 years or greater) age categories (11.5 and 13.2, respectively). This U-shaped pattern was generally consistent across all race/ethnicity groups (data not shown).

TABLE 2. Microcephaly Counts, Prevalence per 10,000 Live Births, and 95% CIs by Maternal Race/Ethnicity, Plurality, and Gestational Age for 30 Birth Defects Surveillance Programs,^a 2009 to 2013

Plurality and gestational age	Maternal race/ethnicity											
	Non-Hispanic White			Non-Hispanic Black			Hispanic			Non-Hispanic Asian or Pacific Islander		
	Cases	Prev	95% CI	Cases	Prev	95% CI	Cases	Prev	95% CI	Cases	Prev	95% CI
Singleton	3,637	6.3	6.1-6.5	1,863	11.0	10.5-11.5	2,927	11.6	11.2-12.0	399	7.3	6.6-8.0
Term birth	2,480	4.7	4.5-4.9	1,117	7.5	7.1-8.0	1,962	8.5	8.1-8.9	290	5.7	5.1-6.4
(37+ weeks)												
Preterm birth	782	21.7	20.2-23.3	482	31.2	28.5-34.1	683	38.7	35.8-41.7	81	23.8	18.9-29.5
(32 - 36 weeks)												
Very preterm birth	352	64.9	58.3-72.1	249	54.7	48.1-61.9	273	87.1	77.1-98.1	25	48.8	31.6-72.1
(< 32 weeks)												
Twin	193	8.6	7.4-9.8	102	15.5	12.6-18.8	124	20.5	17.0-24.4	22	12.3	7.7-18.6
Triplet or higher	10	9.5	4.6-17.5	<5	22.5	6.1-57.6	8	38.1	16.4-75.1	5	67.8	22.0-158.1

^aStates and territories with surveillance programs contributing to the table: Arkansas, Colorado, Delaware (2009-2012), Florida, Georgia (Metropolitan Atlanta), Hawaii (2012), Illinois, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Oregon, Puerto Rico (2013), Rhode Island, South Carolina, Texas, Utah, West Virginia, Wisconsin

^bMissing/other/unknown are included in the total.

Prev, prevalence; CI, Confidence Interval.

TABLE 3. Microcephaly Prevalence Estimates per 10,000 Live Births: Measures of Central Tendency and Dispersion by Maternal Race/Ethnicity and Case Finding Methodology for 30 Birth Defects Surveillance Programs,^a 2009 to 2013

Case finding methodology		Non-Hispanic White	Non-Hispanic Black	Hispanic	Total ^b
Active case finding	Mean (SD)	5.6 (2.8)	8.6 (6.4)	9.9 (8.5)	7.3 (3.9)
	P50 (P10-P90) (P25-P75)	5.1 (3.0-7.7) (3.9-6.3)	7.4 (2.0-18.5) (4.8-10.1)	5.9 (3.6-19.7) (5.5-12.1)	6.7 (3.4-12.1) (5.5-7.8)
Passive case finding	Mean (SD)	6.2 (4.4)	11.5 (10.3)	7.1 (6.3)	7.7 (5.3)
	P50 (P10-P90) (P25-P75)	4.9 (1.7-13.1) (3.0-7.5)	9.4 (0.9-21.9) (7.8-12.7)	5.9 (0.0-14.4) (3.2-9.0)	6.6 (1.9-18.7) (5.2-9.9)
All programs	Mean (SD)	6.0 (3.8)	10.3 (8.9)	8.4 (7.3)	7.5 (4.7)
	P50 (P10-P90) (P25-P75)	4.9 (1.9-12.9) (3.2-6.9)	8.8 (0.9-21.9) (6.8-12.0)	5.9 (2.0-17.0) (4.3-10.1)	6.7 (2.0-14.8) (5.2-9.2)

In the figure, the circle indicates the mean prevalence estimate, the middle vertical bar indicates the median prevalence estimate, the outer vertical bars indicate the interquartile range of prevalence estimates, and the horizontal lines indicate the interdecile range of prevalence estimates.

^aStates and territories with active case finding surveillance programs contributing to the table: Arkansas, Delaware (2009-2012 only), Georgia (Metropolitan Atlanta), Hawaii (2012 only), Iowa, Louisiana, Massachusetts, Minnesota, North Carolina, North Carolina, Texas, Utah; States with passive case finding surveillance programs contributing to the table: Colorado, Florida, Illinois, Kansas, Kentucky, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Dakota, Oregon, Rhode Island, West Virginia, Wisconsin.

^bAsian and Pacific Islander, American Indian/Alaska Native, and missing/other/unknown are included in the total.

P10, 10th percentile; P25, 25th percentile; P50, 50th percentile (Median); P75, 75th percentile; P90, 90th percentile; SD, Standard Deviation.

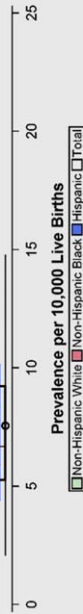


TABLE 4. Microcephaly Counts^a for Select Variables, Nine Birth Defects Surveillance Programs,^b 2009 to 2013

	Cases	
	<i>n</i>	(%)
Total cases	4,766	(100.0)
Time at which earliest HC measurements were taken ^c		
Measured at birth	4,067	(98.4)
Measured beyond the birth hospitalization	51	(1.2)
Unknown	17	(0.4)
HC percentiles ^d		
HC <3 rd percentile for age and sex	1,320	(27.8)
HC 3 rd to <5 th percentile for age and sex	253	(5.3)
HC 5 th to <10 th percentile for age and sex	494	(10.4)
HC ≥10 th percentile for age and sex	1,983	(41.8)
Unknown HC percentile	696	(14.7)
Certainty of diagnosis ^e		
Possible/probable	205	(5.3)
Definite	3,646	(94.7)
Causes ^f		
Documented cause	1,344	(29.5)
Chromosomal abnormality and/or syndrome ^g	1,042	(22.9)
Non-Zika <i>in utero</i> infection	100	(2.2)
Other birth defect potentially associated with microcephaly ^h	304	(6.7)
No documented cause	3,206	(70.5)

^aThe total counts for each variable differ because some programs were unable to provide all of the variables.

^bStates and territories with surveillance programs contributing to the table: Georgia (Metropolitan Atlanta), Massachusetts, Michigan, Minnesota, North Carolina, Puerto Rico (2013 only), Rhode Island, Texas, Utah.

^cIncludes only cases with an HC measurement available from 9 birth defects surveillance programs (*n* = 4,135).

^dIncludes data for eight birth defects surveillance programs (*n* = 4,746); one program was excluded because their case definition required an HC less than 3rd percentile.

^eIncludes data for six birth defects surveillance programs (*n* = 3,851).

^fIncludes data for seven birth defects surveillance programs (*n* = 4,550). Cases with more than one potential cause are included in each category for which they had a condition.

^gIncludes fetal alcohol syndrome.

^hIncludes neural tube defects, holoprosencephaly, craniosynostosis, and conjoined twins.

HC, Head Circumference.

The estimated prevalence of microcephaly increased with decreasing gestational age and with decreasing birth weight. For gestational age, the estimated prevalence (per

10,000 live births) was highest among very preterm births at less than 32 weeks gestation (58.0) and lowest among term births at 37 weeks or more gestation (6.2). For birth weight, the estimated prevalence (per 10,000 live births) was highest among infants with very low birth weight of less than 1500 gm (74.1) and lowest among infants with normal birth weight of 2500 gm or greater (5.0). The estimated prevalence of microcephaly (per 10,000 live births) also was higher among twins (12.0) and triplets or higher multiples (17.3) compared with that for singletons (8.5).

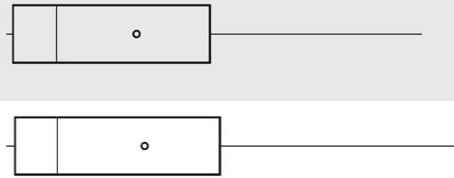

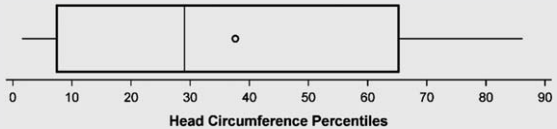
Because race/ethnicity can be associated with the distribution of preterm and multiple births in a population, microcephaly prevalence estimates for these characteristics were stratified by maternal race/ethnicity (Table 2). Prevalence estimates of microcephaly increased with decreasing gestational age among singleton births within every maternal race/ethnicity category, although the CIs were particularly wide for non-Hispanic American Indians and Alaska Natives due to the small number of affected infants. Similarly, prevalence estimates for twins and triplets or higher multiples were generally greater compared with singletons across maternal racial/ethnic categories.

CASE FINDING METHODOLOGY

In Table 3, the mean with standard deviation, median (P50), interquartile interval range (P25–P75) and interdecile range (P10–P90) for the prevalence estimates of microcephaly are presented for birth defects surveillance programs by type of case finding methodology (active, passive) stratified by maternal race/ethnicity. In this analysis, each program carried an equal weight regardless of population size. The accompanying figure displays the mean (circle), median (middle vertical bar), interquartile range (outer vertical bars), and interdecile interval (horizontal lines). The vertical width of each box represents the percent of total cases contributed by each race/ethnicity group. Non-Hispanic Whites are shown in green, non-Hispanic Blacks in pink, Hispanics in blue, and total for all race/ethnicities in white. Race/ethnicity categories that provided less than 10% of the total cases are not shown. A visual explanation of a similar figure was presented in the 2015 NBDPN Annual Report (Mai et al., 2015).

Among programs with active case finding, the mean estimated prevalence of microcephaly (per 10,000 live births) was 7.3 and the median was 6.7, with 80% of programs reporting a prevalence between 3.4 and 12.1 (Table 3). Among programs with passive case finding, the mean estimated prevalence of microcephaly (per 10,000 live births) was 7.7 and the median was 6.6, with 80% of programs reporting a prevalence between 1.9 and 18.7. The variability in prevalence estimates, as indicated by the width of the interdecile range, was greater for birth defects surveillance programs with passive compared with active case finding for all race/ethnicity categories except Hispanic ethnicity. Programs that used active case finding

TABLE 5. Microcephaly HC Percentiles:^a Measures of Central Tendency and Dispersion by Gestational Age for Seven Birth Defects Surveillance Programs,^b 2009 to 2013

Gestational age		HC percentiles	
Term birth (37+ weeks)	Mean (SD)	22.2 (28.0)	
	P50 (P10-P90)	8.7 (0.2-70.2)	
	(P25-P75)	(1.4-34.5)	
Preterm birth (32 - 36 weeks)	Mean (SD)	23.4 (29.3)	
	P50 (P10-P90)	8.7 (0.1-75.9)	
	(P25-P75)	(1.6-36.1)	
Very preterm birth (< 32 weeks)	Mean (SD)	37.6 (31.9)	
	P50 (P10-P90)	29.0 (1.5-86.2)	
	(P25-P75)	(7.4-65.2)	

In the figure, the circle indicates the mean HC percentile, the middle vertical bar indicates the median HC percentile, the outer vertical bars indicate the interquartile range of HC percentiles, and the horizontal lines indicate the interdecile range of HC percentiles.

^aLimited to microcephaly cases with head circumference measurements taken at birth; includes twins and higher multiples.

^bStates with surveillance programs contributing to the table: Georgia (Metropolitan Atlanta), Michigan, Minnesota, North Carolina, Rhode Island, Texas, Utah.

P10, 10th percentile; P25, 25th percentile; P50, 50th percentile (Median); P75, 75th percentile; P90, 90th percentile; SD, Standard Deviation; HC, Head Circumference.

methods reported the highest mean prevalence (per 10,000 live births) among Hispanics (9.9). Hispanics also accounted for the largest proportion of total cases among programs with active case finding. The next highest mean prevalence (per 10,000 live births) among programs with active case finding was for non-Hispanic Blacks (8.6) followed by non-Hispanic Whites (5.6).

Programs that used passive case finding methods reported the highest mean prevalence (per 10,000 live births) among non-Hispanic Blacks (11.5), followed by Hispanics (7.1) and non-Hispanic Whites (6.2). Non-Hispanic Whites accounted for the largest proportion of total cases among these programs. The median estimated prevalence of microcephaly among programs with active and those with passive case finding were similar for all race/ethnicity categories except non-Hispanic Black. Non-Hispanic Black was also the race/ethnicity category that contributed the lowest proportion of cases regardless of case finding methodology. For both types of programs, the median prevalence estimates were lower than the mean estimates, presumably because the median value is less influenced by outliers and less subject to skewing by data from programs with very high prevalence estimates.

ADDITIONAL DATA ON MICROCEPHALY DIAGNOSES

Additional data on microcephaly diagnoses provided by nine birth defects surveillance programs are presented in Table 4. Six of the nine programs provided information on the certainty of the microcephaly diagnosis. Almost 95% of the cases reported by these six programs were

considered to have a definite microcephaly diagnosis; 5.3% (205/3851) were considered to have a possible/probable diagnosis. Seven programs were able to provide data on additional conditions that might contribute to microcephaly. Almost 30% of cases from these programs had at least one additional contributing condition; 22.9% had a chromosomal abnormality or syndrome, 2.2% had documentation of a non-Zika in utero infection, and 6.7% had other birth defects (neural tube defects, holoprosencephaly, craniosynostosis, or conjoined twins).

One of the nine programs was dropped from the analysis of HC percentiles because their case definition required that cases have an HC less than the 3rd percentile for gestational age and sex to be included in the surveillance. Among the remaining eight programs, 27.8% of cases had a HC measurement less than 3rd percentile; 41.8% had a HC measurement greater than or equal to the 10th percentile. Head circumference percentiles could not be calculated for 14.7% of cases from these eight programs due to missing HC measurements, sex, or gestational age values, or because the infants were less than 24 weeks or greater than 42 weeks gestation at birth. Slightly more than 98% of the HC measurements provided were taken during the birth hospitalization.

Analysis of the variability of HC percentiles by gestational age category is presented for seven programs in Table 5. The figure accompanying Table 5 displays the mean (circle), median (middle vertical bar), interquartile range (outer vertical bars), and interdecile range (horizontal lines) for HC percentiles. The one program that provided only the number of cases within each HC percentile

category was dropped from this analysis. In general, the mean HC percentile increased with decreasing gestational age (22.2 among term births, 23.4 among preterm births and 37.6 among very preterm births). The median HC percentile was the same for term and preterm births (8.7) but much higher for very preterm births (29.0). While the interdecile ranges were similar for all three groups, the interquartile range for very preterm births was much wider (7.4–65.2) than for term or preterm births (1.4–34.5 and 1.6–36.1, respectively).

Discussion

The pooled estimated prevalence of microcephaly from 2009 to 2013 among 30 population-based birth defects surveillance programs in the United States was 8.7 per 10,000 live births (95% CI, 8.5–8.9). Worldwide, the reported prevalence of microcephaly varies widely. The European Surveillance of Congenital Anomalies (EUROCAT) reported an overall prevalence of microcephaly of 2.85 per 10,000 live births (95% CI, 2.69–3.02) among full member registries for birth years 2008 to 2012 (<http://www.eurocat-network.eu/ACCESSPREVALENCEDATA/PrevalenceTables>). Among population-based programs included in the 2014 annual report of the International Clearinghouse for Birth Defects, the prevalence estimates for microcephaly for the most recent available birth year (2011, 2012, or 2013) varied widely from 0.42 to 21.24 per 10,000 live births (<http://www.icbdsr.org/filebank/documents/ar2005/Report2014.pdf>).

The data in this report demonstrate several factors that could contribute to the observed variation in the prevalence of microcephaly across U.S. birth defects surveillance programs. While there was little difference in the median prevalence estimates of microcephaly among programs with active versus passive surveillance methods, the estimates among programs with active case finding generally showed less variability. This may be due to a combination of more rigorous case finding and confirmation of suspected cases. A higher estimated prevalence of defects other than microcephaly by programs with active compared with passive case finding has been demonstrated, presumably reflecting more complete case ascertainment (Parker et al., 2010; Mai et al., 2015).

In this issue of the journal, investigators with the Utah Birth Defect Network (UBDN) evaluated their ascertainment of microcephaly (Steele et al., 2016). Their results demonstrated the variability of ascertainment depending on the source and method of case finding. The UBDN uses a combination of active and passive case finding methods. They found that 53% of all potential cases of microcephaly reported to the UBDN were subsequently confirmed as true cases. The sources of case ascertainment with the highest positive predictive value for confirmed microcephaly included tertiary neonatal intensive care units and

pediatric specialty clinics including genetics and ophthalmology. Approximately 50% of reports from vital records and hospital discharge data were subsequently confirmed to have microcephaly. Cases reported by multiple sources were more likely to be true cases of microcephaly.

The distribution of HC percentiles among birth defects surveillance programs that were able to submit these data demonstrates wide variation in the clinical definition of microcephaly. Almost 42% of the cases had an HC greater than or equal to the 10th percentile for age and sex. Such differences in the definition of microcephaly may account for much of the variation in prevalence estimates across surveillance programs, and is one reason that surveillance for microcephaly is considered particularly problematic. Identification of children with mention of microcephaly in the medical record, the approach taken by many birth defects surveillance programs, will include children with a wide range of HC percentiles. In contrast, identification of all children with an HC below a certain percentile value would inevitably include some children who are constitutionally small but otherwise clinically normal, and currently is not logistically practical on a population basis.

The data in this report show a striking increase in the prevalence of microcephaly with decreasing gestational age and birth weight. Reference data for growth parameters at birth for very preterm infants tend to be based on smaller samples than for term infants, which may affect the precision of the reference values. The small size of these infants overall also might lead to increased mention of small head size in the medical record relative to that for larger preterm or term infants. Regardless of the accuracy of the measurement or diagnosis, variations in the proportion of preterm infants and low birth weight infants in populations could contribute to differences in the resulting estimates of the prevalence of microcephaly.

The estimated prevalence of microcephaly in these data also varied by maternal race/ethnicity, maternal age, and plurality. Children of Hispanic and non-Hispanic Black mothers had a substantially higher estimated prevalence of microcephaly compared with children of non-Hispanic White mothers and a moderately higher prevalence compared with children of non-Hispanic Asian or Pacific Island mothers. The increased variability among prevalence estimates for Hispanics from programs using active case finding methods may partly be driven by the high proportion of this ethnic group in the active program that contributed the largest number of microcephaly cases. The fact that the median prevalence estimate among non-Hispanic Blacks was the highest regardless of ascertainment method supports the finding of a true higher prevalence of microcephaly in non-Hispanic Blacks.

As a result, the racial/ethnic distribution of mothers giving birth in different populations could contribute to

differences in observed prevalence estimates for microcephaly. A U-shaped distribution of microcephaly prevalence by maternal age was apparent for all racial/ethnic groups examined, indicating that the age distribution of mothers in different populations also could contribute to differences in observed prevalence estimates. Similarly, the proportion of mothers giving birth to twin or higher multiple infants in different populations also could affect the estimated prevalence of microcephaly. While these deliveries generally constitute a small proportion of most populations, the increasing use of artificial reproductive technology and resultant increase in multiple births may vary across populations.

CONCLUSIONS

The recent spread of Zika virus highlights the critical role that birth defects surveillance programs can play in response to an emerging epidemic or other public health threat affecting mothers and infants. This includes characterizing the public health impact of an exposure and monitoring the effects of prevention efforts. High quality population-based birth defects surveillance data can support a timely response to these threats. However, few birth defects surveillance programs in the United States currently have the infrastructure, resources, and personnel in place to conduct “rapid” surveillance for birth defects while simultaneously ensuring accuracy and completeness. Timeliness of reporting, case ascertainment, and data collection are all areas of potential improvement. The NBDPN continues to develop standards and tools to support programs to achieve this goal. In the absence of a nationwide population-based registry for birth defects, the data collected from state and territorial birth defects surveillance programs through the NBDPN provides the largest source of data regarding the prevalence of birth defects, including microcephaly, in the United States

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North Carolina Birth Defects Monitoring Program; North Dakota Birth Defects Monitoring System; Oregon Birth Anomalies Surveillance System; Puerto Rico Birth Defects Surveillance and Prevention System; Rhode Island Birth Defects Surveillance Program; South Carolina Birth Defects Program; Texas Birth Defects Epidemiology and Surveillance Branch; Utah Birth Defect Network; West Virginia Birth Defects Surveillance System; and Wisconsin Birth Defect Prevention and Surveillance System.

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Major birth Defects from Population-based birth defects surveillance programs in the United States, 2009-2013

The current report includes state-specific data on the 47 major birth defects from 40 population-based birth defects surveillance programs, as well as an accompanying directory. The directory describes data collection status and contacts for state birth defects surveillance programs. **Table 1** presents the NBDPN list of birth defects and their accompanying ICD-9-CM and CDC/BPA diagnostic codes.

Methodology

In collaboration with the CDC, the NBDPN Data Committee issued a call for data in April 2016 for the 47 major birth defects. State programs were provided with a data dictionary and data table creation tools in Excel and SAS for the reporting of major birth defects. All data were received by CDC for data quality checks and formatting. Tables were generated and provided to state programs to allow them to validate their data and approve the final data presentation.

Participating birth defects surveillance programs submitted case counts of the reportable birth defects and live births occurring from January 1, 2009 through December 31, 2013. These cases were stratified by U.S. Census maternal racial/ethnic groups: non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic Asian/Pacific Islander, non-Hispanic American Indian/Alaska Native, and other/unknown. Additionally, trisomy conditions (trisomy 21 [Down syndrome], trisomy 13, and trisomy 18) and gastroschisis were stratified by six maternal age categories: less than 20 years, 20 to 24 years, 25 to 29 years, 30 to 34 years, 35 to 39 years, and 40+ years.

Data presentation

State-specific data from 40 population-based birth defects surveillance programs for 2009 to 2013 are included in the supplemental materials. The data are presented in two tables for each state. The first table shows defect counts and prevalence per 10,000 live births by maternal racial/ethnic categories, and the second table presents counts and prevalence for trisomies and gastroschisis by two maternal age categories (less than 35 years, 35+ years). The prevalence is calculated by dividing the number of birth defect cases for any pregnancy outcome by the total number of live births for the reported years and then multiplying by 10,000 (Mason et al. 2005). The denominator used to calculate the prevalence for all birth defects is total live births except for hypospadias, which is calculated using total male live births, and Turner syndrome, which is calculated using total female live births. The NBDPN provided a data

dictionary and attempted to obtain the data in a uniform manner; however, some variability can be expected in the reported birth defects data by state programs, given differences in coding systems used for case inclusion, case-finding methodology, and available data sources. State-specific notes and clarification about the data, including methodological changes and probable/possible diagnoses, are noted in the data tables. Additional information about each state program data collection methodology is available in the accompanying program directory.

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Table 1: National Birth Defects Prevention Network (NBDPN) List of Reported Birth Defects by Disease Classification Codes

Birth Defects	Disease Classification Codes	
	International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)	Centers for Disease Control and Prevention/British Pediatric Association Classification of Diseases (CDC/BPA)
Central Nervous System		
Anencephaly	740.0 – 740.1	740.00 – 740.10
Spina bifida without anencephaly	741.0, 741.9 without 740.0 - 740.1	741.00 – 741.99 without 740.00 – 740.10
Encephalocele	742.0	742.00 – 742.09
Holoprosencephaly	742.2	742.26
Eye		
Anophthalmia/microphthalmia	743.0, 743.1	743.00 – 743.10
Congenital cataract	743.30 – 743.34	743.32
Ear		
Anotia/microtia	744.01, 744.23	744.01, 744.21
Cardiovascular		
Common truncus (truncus arteriosus)	745.0	745.00 (excluding 745.01)
Transposition of the great arteries (TGA)	745.10, .12, .19	745.10 – 745.12, 745.18 – 745.19
dextro-Transposition of great arteries (d-TGA) – for CCHD screening*	745.10	745.10, 745.11, 745.19
Tetralogy of Fallot	745.2	745.20 – 745.21, 747.31
Ventricular septal defect	745.4	745.40 – 745.49 (excluding 745.487, 745.498)
Atrial septal defect	745.5	745.51 – 745.59
Atrioventricular septal defect (endocardial cushion defect)	745.60, .61, .69	745.60 – 745.69, 745.487
Pulmonary valve atresia and stenosis	746.01, 746.02	746.00, 746.01
Pulmonary valve atresia – for CCHD screening*	746.01	746.00
Tricuspid valve atresia and stenosis	746.1	746.100, 746.106 (excluding 746.105)
Tricuspid valve atresia– for CCHD screening*	746.1	746.100
Ebstein anomaly	746.2	746.20
Aortic valve stenosis	746.3	746.30
Hypoplastic left heart syndrome	746.7	746.70
Coarctation of aorta	747.10	747.10 – 747.19
Total anomalous pulmonary venous connection	747.41	747.42
Single ventricle	745.3	745.3
Interrupted aortic arch	747.11	747.215 – 747.217
Double outlet right ventricle	745.11	745.13 – 745.15
Orofacial		
Cleft palate alone (without cleft lip)	749.0	749.00 – 749.09
Cleft lip alone (without cleft palate)	749.1	749.10 – 749.19
Cleft lip with cleft palate	749.20-749.25	749.20 – 749.29
Choanal atresia	748.0	748.00

Birth Defects	Disease Classification Codes	
	International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)	Centers for Disease Control and Prevention/British Pediatric Association Classification of Diseases (CDC/BPA)
Gastrointestinal		
Esophageal atresia/tracheoesophageal fistula	750.3	750.30 – 750.35
Rectal and large intestinal atresia/stenosis	751.2	751.20 – 751.24
Biliary atresia	751.61	751.65
Small intestinal atresia/stenosis	751.1	751.10 – 751.19
Genitourinary		
Renal agenesis/hypoplasia	753.0	753.00 – 753.01
Bladder exstrophy	753.5	753.50
Hypospadias	752.61	752.60 – 752.62 (excluding 752.61 and 752.621)
Congenital posterior urethral valves	753.6	753.60
Cloacal exstrophy	751.5	751.555
Musculoskeletal		
Gastroschisis	756.73 (as of 10/1/09)	756.71
Omphalocele	756.72 (as of 10/1/09)	756.70
Diaphragmatic hernia	756.6	756.610 – 756.617
Limb deficiencies (reduction defects)	755.2 – 755.4	755.20 – 755.49
Craniosynostosis	No specific code	756.00 – 756.03
Clubfoot	754.51, 754.70	754.50, 754.73 (excluding 754.735)
Chromosomal		
Trisomy 13	758.1	758.10 – 758.19
Trisomy 21 (Down syndrome)	758.0	758.00 – 758.09
Trisomy 18	758.2	758.20 – 758.29
Turner syndrome	758.6	758.60 – 758.69
Deletion 22q11.2	758.32	758.37

CCHD: critical congenital heart defect.

* The primary targets for CCHD screening include 7 conditions: hypoplastic left heart syndrome, pulmonary atresia with intact septum, tetralogy of Fallot, total anomalous pulmonary venous connection, dextro-transposition of great arteries (d-TGA), tricuspid atresia, and truncus arteriosus. The NBDPN traditionally monitors all TGA, and both atresia and stenosis for pulmonary and tricuspid valve conditions; however, for CCHD screening reporting purpose, these conditions are also reported as d-TGA, pulmonary valve atresia, and tricuspid valve atresia.

Arizona
Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	10 <i>0.6</i>	2 <i>1.2</i>	33 <i>2.4</i>	0 <i>0.0</i>	2 <i>0.9</i>	47 <i>1.3</i>	
Anophthalmia/microphthalmia	16 <i>1.0</i>	1 <i>0.6</i>	16 <i>1.1</i>	2 <i>1.5</i>	3 <i>1.3</i>	38 <i>1.1</i>	
Anotia/microtia	12 <i>0.8</i>	1 <i>0.6</i>	17 <i>1.2</i>	1 <i>0.8</i>	5 <i>2.2</i>	36 <i>1.0</i>	
Aortic valve stenosis	26 <i>1.7</i>	3 <i>1.8</i>	30 <i>2.1</i>	1 <i>0.8</i>	6 <i>2.7</i>	66 <i>1.9</i>	
Atrioventricular septal defect (Endocardial cushion defect)	21 <i>2.7</i>	6 <i>7.2</i>	23 <i>3.5</i>	1 <i>1.5</i>	4 <i>3.6</i>	55 <i>3.2</i>	1
Biliary atresia	4 <i>0.3</i>	1 <i>0.6</i>	5 <i>0.4</i>	2 <i>1.5</i>	2 <i>0.9</i>	15 <i>0.4</i>	
Bladder exstrophy	4 <i>0.3</i>	0 <i>0.0</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.1</i>	
Choanal atresia	14 <i>0.9</i>	3 <i>1.8</i>	13 <i>0.9</i>	1 <i>0.8</i>	0 <i>0.0</i>	33 <i>0.9</i>	
Cleft lip alone	60 <i>3.9</i>	1 <i>0.6</i>	41 <i>2.9</i>	4 <i>3.1</i>	18 <i>8.0</i>	124 <i>3.5</i>	
Cleft lip with cleft palate	88 <i>5.7</i>	7 <i>4.3</i>	105 <i>7.5</i>	6 <i>4.6</i>	24 <i>10.7</i>	236 <i>6.7</i>	
Cleft palate alone	91 <i>5.9</i>	4 <i>2.4</i>	77 <i>5.5</i>	12 <i>9.3</i>	19 <i>8.5</i>	203 <i>5.8</i>	
Coarctation of the aorta	64 <i>4.1</i>	9 <i>5.5</i>	64 <i>4.6</i>	2 <i>1.5</i>	12 <i>5.3</i>	151 <i>4.3</i>	
Common truncus (truncus arteriosus)	5 <i>0.3</i>	0 <i>0.0</i>	5 <i>0.4</i>	0 <i>0.0</i>	2 <i>0.9</i>	12 <i>0.3</i>	
Congenital cataract	7 <i>0.5</i>	2 <i>1.2</i>	10 <i>0.7</i>	1 <i>0.8</i>	1 <i>0.4</i>	22 <i>0.6</i>	
Diaphragmatic hernia	32 <i>2.1</i>	2 <i>1.2</i>	37 <i>2.6</i>	1 <i>0.8</i>	5 <i>2.2</i>	80 <i>2.3</i>	
Ebstein anomaly	11 <i>0.7</i>	0 <i>0.0</i>	14 <i>1.0</i>	1 <i>0.8</i>	4 <i>1.8</i>	31 <i>0.9</i>	
Encephalocele	10 <i>0.6</i>	0 <i>0.0</i>	12 <i>0.9</i>	1 <i>0.8</i>	2 <i>0.9</i>	25 <i>0.7</i>	
Esophageal atresia/tracheoesophageal fistula	40 <i>2.6</i>	4 <i>2.4</i>	29 <i>2.1</i>	2 <i>1.5</i>	6 <i>2.7</i>	82 <i>2.3</i>	
Gastroschisis	76 <i>4.9</i>	13 <i>7.9</i>	106 <i>7.6</i>	3 <i>2.3</i>	22 <i>9.8</i>	227 <i>6.5</i>	
Holoprosencephaly	3 <i>0.8</i>	0 <i>0.0</i>	6 <i>1.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>1.1</i>	2
Hypoplastic left heart syndrome	40 <i>2.6</i>	8 <i>4.9</i>	36 <i>2.6</i>	3 <i>2.3</i>	9 <i>4.0</i>	96 <i>2.7</i>	
Interrupted aortic arch	1 <i>0.3</i>	0 <i>0.0</i>	2 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.4</i>	2
Limb deficiencies (reduction defects)	41 <i>2.7</i>	10 <i>6.1</i>	38 <i>2.7</i>	1 <i>0.8</i>	9 <i>4.0</i>	100 <i>2.9</i>	
Omphalocele	38 <i>2.5</i>	2 <i>1.2</i>	22 <i>1.6</i>	4 <i>3.1</i>	2 <i>0.9</i>	68 <i>1.9</i>	
Pulmonary valve atresia and stenosis	85 <i>5.5</i>	11 <i>6.7</i>	84 <i>6.0</i>	5 <i>3.9</i>	17 <i>7.6</i>	206 <i>5.9</i>	
Pulmonary valve atresia	39 <i>2.5</i>	6 <i>3.7</i>	39 <i>2.8</i>	3 <i>2.3</i>	6 <i>2.7</i>	96 <i>2.7</i>	
Single ventricle	12 <i>0.8</i>	1 <i>0.6</i>	15 <i>1.1</i>	0 <i>0.0</i>	1 <i>0.4</i>	29 <i>0.8</i>	
Spina bifida without anencephalus	53 <i>3.4</i>	5 <i>3.1</i>	49 <i>3.5</i>	4 <i>3.1</i>	13 <i>5.8</i>	129 <i>3.7</i>	
Tetralogy of Fallot	64 <i>4.1</i>	5 <i>3.1</i>	62 <i>4.4</i>	5 <i>3.9</i>	14 <i>6.2</i>	154 <i>4.4</i>	
Total anomalous pulmonary venous connection	13 <i>1.1</i>	2 <i>1.6</i>	17 <i>1.7</i>	1 <i>1.0</i>	4 <i>2.4</i>	38 <i>1.5</i>	3

Arizona**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Maternal Race/Ethnicity							Notes
Defect	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic	Total**	
Transposition of the great arteries (TGA)	54 <i>3.5</i>	8 <i>4.9</i>	64 <i>4.6</i>	3 <i>2.3</i>	10 <i>4.5</i>	139 <i>4.0</i>	
Dextro-transposition of great arteries (d-TGA)	33 <i>2.1</i>	1 <i>0.6</i>	38 <i>2.7</i>	2 <i>1.5</i>	3 <i>1.3</i>	77 <i>2.2</i>	
Tricuspid valve atresia and stenosis	6 <i>0.5</i>	1 <i>0.8</i>	9 <i>0.9</i>	2 <i>2.0</i>	1 <i>0.6</i>	19 <i>0.7</i>	3
Trisomy 13	12 <i>0.8</i>	4 <i>2.4</i>	16 <i>1.1</i>	3 <i>2.3</i>	1 <i>0.4</i>	36 <i>1.0</i>	
Trisomy 18	32 <i>2.1</i>	4 <i>2.4</i>	21 <i>1.5</i>	3 <i>2.3</i>	4 <i>1.8</i>	64 <i>1.8</i>	
Trisomy 21 (Down syndrome)	177 <i>11.5</i>	17 <i>10.4</i>	205 <i>14.6</i>	14 <i>10.8</i>	30 <i>13.4</i>	449 <i>12.8</i>	
Total live births	154265	16382	139948	12941	22437	350113	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Arizona**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	219 <i>7.2</i>	8 <i>1.7</i>	227 <i>6.5</i>	
Trisomy 13	25 <i>0.8</i>	11 <i>2.3</i>	36 <i>1.0</i>	
Trisomy 18	37 <i>1.2</i>	26 <i>5.5</i>	64 <i>1.8</i>	
Trisomy 21 (Down syndrome)	239 <i>7.9</i>	210 <i>44.2</i>	449 <i>12.8</i>	
Total live births	302599	47514	350113	

**Total includes unknown maternal age

Notes

- 1.Data for this condition begin mid-year 2011.
- 2.Data for this condition begin in 2012.
- 3.Data for this condition begin in 2010.

General comments

- Data does not include terminations.
- Stillborn cases are included in this report if there is a fetal death certificate, regardless of fetal weight or gestational age.

Arkansas**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	39 <i>3.8</i>	6 <i>2.0</i>	6 <i>3.8</i>	1 <i>3.4</i>	1 <i>12.6</i>	53 <i>3.4</i>	
Anophthalmia/microphthalmia	24 <i>2.3</i>	5 <i>1.7</i>	3 <i>1.9</i>	1 <i>3.4</i>	0 <i>0.0</i>	33 <i>2.1</i>	
Anotia/microtia	19 <i>1.8</i>	1 <i>0.3</i>	14 <i>8.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	34 <i>2.2</i>	
Aortic valve stenosis	51 <i>4.9</i>	3 <i>1.0</i>	9 <i>5.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	66 <i>4.3</i>	
Atrial septal defect	360 <i>34.7</i>	103 <i>35.1</i>	61 <i>38.1</i>	17 <i>58.3</i>	1 <i>12.6</i>	596 <i>38.8</i>	
Atrioventricular septal defect (Endocardial cushion defect)	81 <i>7.8</i>	24 <i>8.2</i>	9 <i>5.6</i>	4 <i>13.7</i>	0 <i>0.0</i>	120 <i>7.8</i>	
Biliary atresia	5 <i>0.5</i>	0 <i>0.0</i>	2 <i>1.3</i>	1 <i>3.4</i>	0 <i>0.0</i>	11 <i>0.7</i>	
Bladder exstrophy	3 <i>0.3</i>	1 <i>0.3</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Choanal atresia	4 <i>0.4</i>	2 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.4</i>	
Cleft lip alone	45 <i>4.3</i>	5 <i>1.7</i>	4 <i>2.5</i>	0 <i>0.0</i>	1 <i>12.6</i>	56 <i>3.6</i>	
Cleft lip with cleft palate	85 <i>8.2</i>	12 <i>4.1</i>	12 <i>7.5</i>	2 <i>6.9</i>	0 <i>0.0</i>	115 <i>7.5</i>	
Cleft palate alone	82 <i>7.9</i>	11 <i>3.8</i>	9 <i>5.6</i>	1 <i>3.4</i>	0 <i>0.0</i>	108 <i>7.0</i>	
Cloacal exstrophy	1 <i>0.1</i>	2 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.2</i>	
Clubfoot	215 <i>20.7</i>	35 <i>11.9</i>	31 <i>19.4</i>	2 <i>6.9</i>	1 <i>12.6</i>	290 <i>18.9</i>	
Coarctation of the aorta	94 <i>9.1</i>	11 <i>3.8</i>	9 <i>5.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	120 <i>7.8</i>	
Common truncus (truncus arteriosus)	10 <i>1.0</i>	1 <i>0.3</i>	2 <i>1.3</i>	1 <i>3.4</i>	0 <i>0.0</i>	14 <i>0.9</i>	
Congenital cataract	37 <i>3.6</i>	8 <i>2.7</i>	4 <i>2.5</i>	3 <i>10.3</i>	0 <i>0.0</i>	57 <i>3.7</i>	
Congenital posterior urethral valves	17 <i>1.6</i>	9 <i>3.1</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	30 <i>2.0</i>	
Craniosynostosis	71 <i>6.8</i>	6 <i>2.0</i>	10 <i>6.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	100 <i>6.5</i>	
Deletion 22q11.2	8 <i>0.8</i>	1 <i>0.3</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.8</i>	
Diaphragmatic hernia	40 <i>3.9</i>	10 <i>3.4</i>	6 <i>3.8</i>	0 <i>0.0</i>	1 <i>12.6</i>	60 <i>3.9</i>	
Double outlet right ventricle	22 <i>2.1</i>	12 <i>4.1</i>	3 <i>1.9</i>	1 <i>3.4</i>	0 <i>0.0</i>	38 <i>2.5</i>	
Ebstein anomaly	8 <i>0.8</i>	0 <i>0.0</i>	5 <i>3.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>1.0</i>	
Encephalocele	10 <i>1.0</i>	9 <i>3.1</i>	1 <i>0.6</i>	1 <i>3.4</i>	0 <i>0.0</i>	23 <i>1.5</i>	
Esophageal atresia/tracheoesophageal fistula	33 <i>3.2</i>	7 <i>2.4</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	44 <i>2.9</i>	
Gastroschisis	93 <i>9.0</i>	14 <i>4.8</i>	13 <i>8.1</i>	2 <i>6.9</i>	1 <i>12.6</i>	123 <i>8.0</i>	
Holoprosencephaly	24 <i>2.3</i>	5 <i>1.7</i>	1 <i>0.6</i>	1 <i>3.4</i>	1 <i>12.6</i>	34 <i>2.2</i>	
Hypoplastic left heart syndrome	31 <i>3.0</i>	7 <i>2.4</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	41 <i>2.7</i>	
Hypospadias*	533 <i>99.9</i>	115 <i>77.2</i>	21 <i>25.7</i>	10 <i>67.9</i>	1 <i>23.9</i>	728 <i>92.3</i>	
Interrupted aortic arch	6 <i>0.6</i>	3 <i>1.0</i>	1 <i>0.6</i>	1 <i>3.4</i>	0 <i>0.0</i>	12 <i>0.8</i>	

Arkansas**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	64 <i>6.2</i>	24 <i>8.2</i>	10 <i>6.3</i>	1 <i>3.4</i>	2 <i>25.3</i>	104 <i>6.8</i>	
Omphalocele	27 <i>2.6</i>	12 <i>4.1</i>	4 <i>2.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	43 <i>2.8</i>	
Pulmonary valve atresia and stenosis	152 <i>14.7</i>	48 <i>16.4</i>	24 <i>15.0</i>	8 <i>27.4</i>	1 <i>12.6</i>	251 <i>16.3</i>	
Pulmonary valve atresia	7 <i>0.7</i>	4 <i>1.4</i>	3 <i>1.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>1.0</i>	
Rectal and large intestinal atresia/stenosis	39 <i>3.8</i>	9 <i>3.1</i>	5 <i>3.1</i>	2 <i>6.9</i>	0 <i>0.0</i>	60 <i>3.9</i>	
Renal agenesis/hypoplasia	25 <i>2.4</i>	5 <i>1.7</i>	8 <i>5.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	39 <i>2.5</i>	
Single ventricle	4 <i>0.4</i>	3 <i>1.0</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>0.6</i>	
Small intestinal atresia/stenosis	29 <i>2.8</i>	8 <i>2.7</i>	8 <i>5.0</i>	1 <i>3.4</i>	0 <i>0.0</i>	53 <i>3.4</i>	
Spina bifida without anencephalus	44 <i>4.2</i>	8 <i>2.7</i>	12 <i>7.5</i>	2 <i>6.9</i>	0 <i>0.0</i>	66 <i>4.3</i>	
Tetralogy of Fallot	47 <i>4.5</i>	11 <i>3.8</i>	7 <i>4.4</i>	1 <i>3.4</i>	1 <i>12.6</i>	72 <i>4.7</i>	
Total anomalous pulmonary venous connection	10 <i>1.0</i>	4 <i>1.4</i>	2 <i>1.3</i>	1 <i>3.4</i>	0 <i>0.0</i>	21 <i>1.4</i>	
Transposition of the great arteries (TGA)	49 <i>4.7</i>	10 <i>3.4</i>	4 <i>2.5</i>	4 <i>13.7</i>	0 <i>0.0</i>	70 <i>4.6</i>	
Dextro-transposition of great arteries (d-TGA)	28 <i>2.7</i>	4 <i>1.4</i>	3 <i>1.9</i>	3 <i>10.3</i>	0 <i>0.0</i>	40 <i>2.6</i>	
Tricuspid valve atresia and stenosis	6 <i>0.6</i>	3 <i>1.0</i>	2 <i>1.3</i>	1 <i>3.4</i>	0 <i>0.0</i>	12 <i>0.8</i>	
Tricuspid valve atresia	6 <i>0.6</i>	3 <i>1.0</i>	2 <i>1.3</i>	1 <i>3.4</i>	0 <i>0.0</i>	12 <i>0.8</i>	
Trisomy 13	11 <i>1.1</i>	5 <i>1.7</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>1.2</i>	
Trisomy 18	30 <i>2.9</i>	7 <i>2.4</i>	8 <i>5.0</i>	1 <i>3.4</i>	0 <i>0.0</i>	47 <i>3.1</i>	
Trisomy 21 (Down syndrome)	129 <i>12.4</i>	28 <i>9.6</i>	23 <i>14.4</i>	3 <i>10.3</i>	0 <i>0.0</i>	190 <i>12.4</i>	
Turner syndrome†	16 <i>3.2</i>	0 <i>0.0</i>	3 <i>3.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>2.5</i>	
Ventricular septal defect	650 <i>62.7</i>	123 <i>42.0</i>	126 <i>78.8</i>	25 <i>85.8</i>	2 <i>25.3</i>	999 <i>65.0</i>	
Total live births §	103721	29313	15996	2915	792	153792	
Male live births	53376	14890	8187	1472	418	78855	
Female live births	50342	14421	7808	1443	374	74931	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Arkansas**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	121 <i>8.6</i>	2 <i>1.6</i>	123 <i>8.0</i>	
Trisomy 13	14 <i>1.0</i>	4 <i>3.2</i>	18 <i>1.2</i>	
Trisomy 18	29 <i>2.1</i>	18 <i>14.4</i>	47 <i>3.1</i>	
Trisomy 21 (Down syndrome)	105 <i>7.4</i>	81 <i>64.7</i>	190 <i>12.4</i>	
Total live births	141265	12513	153792	

**Total includes unknown maternal age

General comments

-Data for 2013 are provisional.

California**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	<5 .	0 0.0	46 2.3	<5 .	0 0.0	94 2.9	
Anophthalmia/microphthalmia	8 1.0	<5 .	19 1.0	<5 .	0 0.0	36 1.1	
Anotia/microtia	9 1.1	<5 .	90 4.6	<5 .	0 0.0	111 3.4	
Aortic valve stenosis	22 2.6	<5 .	32 1.6	<5 .	<5 .	58 1.8	
Atrial septal defect	85 10.2	15 9.6	226 11.5	22 8.5	0 0.0	362 11.1	1
Atrioventricular septal defect (Endocardial cushion defect)	37 4.5	9 5.8	77 3.9	10 3.9	<5 .	143 4.4	
Biliary atresia	<5 .	<5 .	8 0.4	<5 .	0 0.0	17 0.5	
Bladder exstrophy	0 0.0	<5 .	0 0.0	<5 .	0 0.0	<5 .	
Choanal atresia	<5 .	0 0.0	<5 .	0 0.0	0 0.0	8 0.2	
Cleft lip alone	27 3.3	<5 .	47 2.4	<5 .	0 0.0	96 2.9	2
Cleft lip with cleft palate	36 4.3	<5 .	129 6.6	7 2.7	<5 .	189 5.8	2
Cleft palate alone	27 3.3	<5 .	68 3.5	<5 .	<5 .	115 3.5	2, 3
Cloacal exstrophy	<5 .	0 0.0	0 0.0	0 0.0	0 0.0	<5 .	
Coarctation of the aorta	49 5.9	7 4.5	101 5.1	5 1.9	0 0.0	173 5.3	
Common truncus (truncus arteriosus)	<5 .	0 0.0	5 0.3	0 0.0	0 0.0	10 0.3	
Congenital cataract	13 1.6	<5 .	19 1.0	<5 .	0 0.0	39 1.2	
Craniosynostosis	38 4.6	0 0.0	75 3.8	<5 .	0 0.0	118 3.6	
Diaphragmatic hernia	22 2.6	<5 .	40 2.0	6 2.3	0 0.0	75 2.3	
Double outlet right ventricle	15 1.8	<5 .	44 2.2	6 2.3	<5 .	72 2.2	
Ebstein anomaly	8 1.0	0 0.0	12 0.6	<5 .	0 0.0	22 0.7	
Encephalocele	<5 .	0 0.0	16 0.8	<5 .	<5 .	26 0.8	
Esophageal atresia/tracheoesophageal fistula	20 2.4	<5 .	35 1.8	<5 .	0 0.0	63 1.9	4
Gastroschisis	46 5.5	<5 .	114 5.8	12 4.6	<5 .	202 6.2	
Holoprosencephaly	<5 .	<5 .	24 1.2	0 0.0	0 0.0	39 1.2	
Hypoplastic left heart syndrome	23 2.8	<5 .	36 1.8	<5 .	0 0.0	78 2.4	
Hypospadias*	74 17.3	6 7.6	71 7.1	<5 .	<5 .	168 10.1	5
Interrupted aortic arch	<5 .	0 0.0	<5 .	0 0.0	0 0.0	8 0.2	
Limb deficiencies (reduction defects)	20 2.4	<5 .	57 2.9	<5 .	0 0.0	94 2.9	
Omphalocele	11 1.3	<5 .	25 1.3	0 0.0	<5 .	52 1.6	
Pulmonary valve atresia	6 0.7	<5 .	31 1.6	5 1.9	<5 .	49 1.5	

California**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Rectal and large intestinal atresia/stenosis	25 3.0	<5 .	69 3.5	<5 .	0 0.0	117 3.6	6
Renal agenesis/hypoplasia	<5 .	0 0.0	19 1.0	<5 .	0 0.0	27 0.8	7
Single ventricle	5 0.6	<5 .	17 0.9	<5 .	0 0.0	25 0.8	
Small intestinal atresia/stenosis	20 2.4	7 4.5	94 4.8	<5 .	<5 .	137 4.2	
Spina bifida without anencephalus	32 3.9	<5 .	81 4.1	<5 .	<5 .	130 4.0	
Tetralogy of Fallot	29 3.5	<5 .	61 3.1	<5 .	0 0.0	102 3.1	
Total anomalous pulmonary venous connection	12 1.4	<5 .	43 2.2	<5 .	<5 .	64 2.0	
Dextro-transposition of great arteries (d-TGA)	18 2.2	<5 .	37 1.9	<5 .	0 0.0	63 1.9	
Tricuspid valve atresia	5 0.6	0 0.0	13 0.7	<5 .	0 0.0	21 0.6	
Trisomy 13	6 0.7	<5 .	17 0.9	0 0.0	<5 .	44 1.3	
Trisomy 18	19 2.3	<5 .	45 2.3	<5 .	0 0.0	118 3.6	
Trisomy 21 (Down syndrome)	94 11.3	22 14.1	302 15.4	16 6.2	0 0.0	470 14.4	
Total live births	83019	15608	196676	25899	2032	326993	
Male live births	42719	7855	99891	13283	1018	166645	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

California**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Trisomy 13	21 <i>0.7</i>	9 <i>2.3</i>	44 <i>1.3</i>	
Trisomy 18	38 <i>1.3</i>	38 <i>9.8</i>	118 <i>3.6</i>	
Trisomy 21 (Down syndrome)	221 <i>7.7</i>	234 <i>60.1</i>	470 <i>14.4</i>	
Total live births	288004	38918	326993	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include only cases confirmed by physician review or echo or cath or surgery or autopsy. If the defect is a component of another major heart malformation it is not counted.
- 2.Data for this condition exclude cases where holoprosencephaly is present.
- 3.Data for this condition do not include submucous cleft and bifid uvula.
- 4.Data for this condition do not include isolated tracheoesophageal fistula.
- 5.Data for this condition include only 2nd and 3rd degree cases.
- 6.Data for this condition do not include anal stenosis.
- 7.Data for this condition do not include unilateral renal agenesis/hypoplasia.

General comments

- <5 indicates cell size suppressed to protect confidentiality or to indicate case count <5.
- Cases with single gene disorders are not included in this report. Cases with chromosomal defects other than trisomy 13, 18 and 21 are not included in this report.
- Stillbirths greater than or equal to 20 weeks are included for all defect types.
- Terminations are included for all gestational ages.

Colorado
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	22 <i>1.1</i>	5 <i>3.5</i>	16 <i>1.7</i>	1 <i>0.9</i>	1 <i>4.4</i>	50 <i>1.5</i>	
Anophthalmia/microphthalmia	32 <i>1.6</i>	3 <i>2.1</i>	23 <i>2.4</i>	0 <i>0.0</i>	1 <i>4.4</i>	60 <i>1.8</i>	
Anotia/microtia	31 <i>1.5</i>	6 <i>4.2</i>	46 <i>4.9</i>	4 <i>3.5</i>	1 <i>4.4</i>	93 <i>2.8</i>	
Aortic valve stenosis	64 <i>3.1</i>	4 <i>2.8</i>	34 <i>3.6</i>	2 <i>1.8</i>	0 <i>0.0</i>	107 <i>3.2</i>	
Atrial septal defect	2536 <i>124.1</i>	266 <i>187.2</i>	1302 <i>137.9</i>	162 <i>142.1</i>	36 <i>157.7</i>	4470 <i>134.0</i>	
Atrioventricular septal defect (Endocardial cushion defect)	78 <i>3.8</i>	12 <i>8.4</i>	38 <i>4.0</i>	4 <i>3.5</i>	2 <i>8.8</i>	150 <i>4.5</i>	
Biliary atresia	28 <i>1.4</i>	1 <i>0.7</i>	13 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	47 <i>1.4</i>	
Bladder exstrophy	9 <i>0.4</i>	0 <i>0.0</i>	3 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.4</i>	
Choanal atresia	44 <i>2.2</i>	3 <i>2.1</i>	19 <i>2.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	73 <i>2.2</i>	
Cleft lip alone	82 <i>4.0</i>	5 <i>3.5</i>	47 <i>5.0</i>	2 <i>1.8</i>	0 <i>0.0</i>	145 <i>4.3</i>	
Cleft lip with cleft palate	144 <i>7.0</i>	8 <i>5.6</i>	98 <i>10.4</i>	7 <i>6.1</i>	3 <i>13.1</i>	321 <i>9.6</i>	
Cleft palate alone	164 <i>8.0</i>	8 <i>5.6</i>	68 <i>7.2</i>	7 <i>6.1</i>	3 <i>13.1</i>	282 <i>8.5</i>	
Cloacal exstrophy	138 <i>6.8</i>	13 <i>9.2</i>	78 <i>8.3</i>	8 <i>8.7</i>	2 <i>8.8</i>	256 <i>7.7</i>	
Clubfoot	367 <i>18.0</i>	15 <i>10.6</i>	180 <i>19.1</i>	18 <i>15.8</i>	7 <i>30.7</i>	626 <i>18.8</i>	
Coarctation of the aorta	193 <i>9.4</i>	18 <i>12.7</i>	77 <i>8.2</i>	4 <i>3.5</i>	0 <i>0.0</i>	304 <i>9.1</i>	
Common truncus (truncus arteriosus)	19 <i>0.9</i>	1 <i>0.7</i>	12 <i>1.3</i>	0 <i>0.0</i>	1 <i>4.4</i>	33 <i>1.0</i>	
Congenital cataract	45 <i>2.2</i>	2 <i>1.4</i>	22 <i>2.3</i>	2 <i>1.8</i>	1 <i>4.4</i>	75 <i>2.2</i>	
Congenital posterior urethral valves	44 <i>2.2</i>	8 <i>5.6</i>	19 <i>2.0</i>	3 <i>2.6</i>	0 <i>0.0</i>	92 <i>2.8</i>	
Deletion 22q11.2	24 <i>1.2</i>	4 <i>2.8</i>	15 <i>1.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	53 <i>1.6</i>	
Diaphragmatic hernia	45 <i>2.2</i>	5 <i>3.5</i>	23 <i>2.4</i>	1 <i>0.9</i>	0 <i>0.0</i>	80 <i>2.4</i>	
Double outlet right ventricle	22 <i>1.1</i>	4 <i>2.8</i>	19 <i>2.0</i>	3 <i>2.6</i>	0 <i>0.0</i>	57 <i>1.7</i>	
Ebstein anomaly	30 <i>1.5</i>	0 <i>0.0</i>	8 <i>0.8</i>	1 <i>0.9</i>	0 <i>0.0</i>	42 <i>1.3</i>	
Encephalocele	13 <i>0.6</i>	3 <i>2.1</i>	14 <i>1.5</i>	2 <i>1.8</i>	0 <i>0.0</i>	36 <i>1.1</i>	
Esophageal atresia/tracheoesophageal fistula	96 <i>4.7</i>	5 <i>3.5</i>	42 <i>4.4</i>	3 <i>2.6</i>	1 <i>4.4</i>	157 <i>4.7</i>	
Gastroschisis	77 <i>3.8</i>	4 <i>2.8</i>	53 <i>5.6</i>	3 <i>2.6</i>	2 <i>8.8</i>	152 <i>4.6</i>	
Holoprosencephaly	10 <i>0.5</i>	1 <i>0.7</i>	15 <i>1.6</i>	1 <i>0.9</i>	0 <i>0.0</i>	33 <i>1.0</i>	
Hypoplastic left heart syndrome	55 <i>2.7</i>	3 <i>2.1</i>	28 <i>3.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	94 <i>2.8</i>	
Hypospadias*	1429 <i>136.2</i>	108 <i>148.7</i>	361 <i>74.6</i>	43 <i>74.8</i>	18 <i>151.5</i>	2051 <i>119.9</i>	
Interrupted aortic arch	20 <i>1.0</i>	5 <i>3.5</i>	6 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	33 <i>1.0</i>	
Limb deficiencies (reduction defects)	82 <i>4.0</i>	6 <i>4.2</i>	51 <i>5.4</i>	1 <i>0.9</i>	0 <i>0.0</i>	162 <i>4.9</i>	

Colorado**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	39 <i>1.9</i>	3 <i>2.1</i>	22 <i>2.3</i>	1 <i>0.9</i>	1 <i>4.4</i>	80 <i>2.4</i>	
Pulmonary valve atresia and stenosis	127 <i>6.2</i>	13 <i>9.2</i>	64 <i>6.8</i>	8 <i>7.0</i>	3 <i>13.1</i>	228 <i>6.8</i>	
Pulmonary valve atresia	37 <i>1.8</i>	10 <i>7.0</i>	21 <i>2.2</i>	2 <i>1.8</i>	0 <i>0.0</i>	74 <i>2.2</i>	
Rectal and large intestinal atresia/stenosis	94 <i>4.6</i>	14 <i>9.9</i>	46 <i>4.9</i>	10 <i>8.8</i>	3 <i>13.1</i>	194 <i>5.8</i>	
Renal agenesis/hypoplasia	105 <i>5.1</i>	15 <i>10.6</i>	48 <i>5.1</i>	5 <i>4.4</i>	3 <i>13.1</i>	202 <i>6.1</i>	
Single ventricle	24 <i>1.2</i>	1 <i>0.7</i>	8 <i>0.8</i>	2 <i>1.8</i>	1 <i>4.4</i>	38 <i>1.1</i>	
Small intestinal atresia/stenosis	109 <i>5.3</i>	7 <i>4.9</i>	69 <i>7.3</i>	6 <i>5.3</i>	3 <i>13.1</i>	198 <i>5.9</i>	
Spina bifida without anencephalus	51 <i>2.5</i>	2 <i>1.4</i>	40 <i>4.2</i>	1 <i>0.9</i>	1 <i>4.4</i>	126 <i>3.8</i>	
Tetralogy of Fallot	63 <i>3.1</i>	6 <i>4.2</i>	36 <i>3.8</i>	4 <i>3.5</i>	1 <i>4.4</i>	120 <i>3.6</i>	
Total anomalous pulmonary venous connection	13 <i>0.6</i>	1 <i>0.7</i>	17 <i>1.8</i>	1 <i>0.9</i>	0 <i>0.0</i>	33 <i>1.0</i>	
Transposition of the great arteries (TGA)	50 <i>2.4</i>	4 <i>2.8</i>	19 <i>2.0</i>	5 <i>4.4</i>	0 <i>0.0</i>	80 <i>2.4</i>	
Dextro-transposition of great arteries (d-TGA)	44 <i>2.2</i>	4 <i>2.8</i>	20 <i>2.1</i>	5 <i>4.4</i>	0 <i>0.0</i>	75 <i>2.2</i>	
Tricuspid valve atresia and stenosis	29 <i>1.4</i>	6 <i>4.2</i>	11 <i>1.2</i>	1 <i>0.9</i>	0 <i>0.0</i>	48 <i>1.4</i>	
Tricuspid valve atresia	28 <i>1.4</i>	6 <i>4.2</i>	11 <i>1.2</i>	1 <i>0.9</i>	0 <i>0.0</i>	47 <i>1.4</i>	
Trisomy 13	19 <i>0.9</i>	4 <i>2.8</i>	15 <i>1.6</i>	2 <i>1.8</i>	0 <i>0.0</i>	80 <i>2.4</i>	
Trisomy 18	38 <i>1.9</i>	6 <i>4.2</i>	28 <i>3.0</i>	10 <i>8.8</i>	0 <i>0.0</i>	182 <i>5.5</i>	
Trisomy 21 (Down syndrome)	280 <i>13.7</i>	32 <i>22.5</i>	183 <i>19.4</i>	18 <i>15.8</i>	4 <i>17.5</i>	796 <i>23.9</i>	
Turner syndrome†	19 <i>1.9</i>	2 <i>2.9</i>	21 <i>4.6</i>	3 <i>5.3</i>	0 <i>0.0</i>	59 <i>3.6</i>	
Ventricular septal defect	985 <i>48.2</i>	91 <i>64.1</i>	550 <i>58.2</i>	56 <i>49.1</i>	19 <i>83.2</i>	1802 <i>54.0</i>	
Total live births §	204336	14207	94439	11404	2283	333572	
Male live births	104924	7265	48399	5749	1188	171088	
Female live births	99408	6940	46038	5654	1095	162475	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Colorado**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	137 <i>5.0</i>	4 <i>0.7</i>	152 <i>4.6</i>	
Trisomy 13	27 <i>1.0</i>	13 <i>2.3</i>	80 <i>2.4</i>	
Trisomy 18	47 <i>1.7</i>	36 <i>6.3</i>	182 <i>5.5</i>	
Trisomy 21 (Down syndrome)	257 <i>9.3</i>	265 <i>46.3</i>	796 <i>23.9</i>	
Total live births	276337	57178	333572	

**Total includes unknown maternal age

Delaware
Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	5 <i>2.0</i>	1 <i>0.8</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>1.8</i>	
Anophthalmia/microphthalmia	6 <i>2.4</i>	3 <i>2.5</i>	4 <i>7.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>2.9</i>	
Anotia/microtia	12 <i>4.9</i>	4 <i>3.3</i>	6 <i>10.5</i>	1 <i>4.7</i>	0 <i>0.0</i>	23 <i>5.1</i>	
Aortic valve stenosis	6 <i>2.4</i>	2 <i>1.7</i>	1 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>2.0</i>	
Atrial septal defect	69 <i>28.1</i>	25 <i>20.8</i>	23 <i>40.1</i>	3 <i>14.0</i>	0 <i>0.0</i>	121 <i>27.0</i>	1
Atrioventricular septal defect (Endocardial cushion defect)	16 <i>6.5</i>	8 <i>6.6</i>	3 <i>5.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>6.0</i>	
Biliary atresia	1 <i>0.4</i>	2 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.7</i>	
Bladder exstrophy	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Choanal atresia	3 <i>1.2</i>	4 <i>3.3</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>2.0</i>	
Cleft lip alone	6 <i>2.4</i>	2 <i>1.7</i>	1 <i>1.7</i>	1 <i>4.7</i>	0 <i>0.0</i>	10 <i>2.2</i>	
Cleft lip with cleft palate	14 <i>5.7</i>	5 <i>4.2</i>	7 <i>12.2</i>	1 <i>4.7</i>	0 <i>0.0</i>	28 <i>6.2</i>	
Cleft palate alone	17 <i>6.9</i>	6 <i>5.0</i>	4 <i>7.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>6.0</i>	2
Cloacal exstrophy	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Clubfoot	37 <i>15.1</i>	14 <i>11.6</i>	11 <i>19.2</i>	4 <i>18.6</i>	0 <i>0.0</i>	66 <i>14.7</i>	
Coarctation of the aorta	21 <i>8.6</i>	2 <i>1.7</i>	7 <i>12.2</i>	2 <i>9.3</i>	0 <i>0.0</i>	32 <i>7.1</i>	3
Common truncus (truncus arteriosus)	1 <i>0.4</i>	0 <i>0.0</i>	1 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.4</i>	
Congenital cataract	10 <i>4.1</i>	3 <i>2.5</i>	3 <i>5.2</i>	1 <i>4.7</i>	0 <i>0.0</i>	17 <i>3.8</i>	
Congenital posterior urethral valves	3 <i>1.2</i>	4 <i>3.3</i>	0 <i>0.0</i>	1 <i>4.7</i>	0 <i>0.0</i>	8 <i>1.8</i>	4
Craniosynostosis	16 <i>6.5</i>	5 <i>4.2</i>	5 <i>8.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	26 <i>5.8</i>	
Deletion 22q11.2	2 <i>0.8</i>	2 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.9</i>	
Diaphragmatic hernia	5 <i>2.0</i>	0 <i>0.0</i>	1 <i>1.7</i>	1 <i>4.7</i>	0 <i>0.0</i>	7 <i>1.6</i>	
Double outlet right ventricle	2 <i>0.8</i>	1 <i>0.8</i>	3 <i>5.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>1.3</i>	
Ebstein anomaly	2 <i>1.1</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.9</i>	
Encephalocele	1 <i>0.4</i>	2 <i>1.7</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>1.1</i>	
Esophageal atresia/tracheoesophageal fistula	2 <i>0.8</i>	1 <i>0.8</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>1.1</i>	
Gastroschisis	19 <i>7.7</i>	12 <i>10.0</i>	3 <i>5.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	34 <i>7.6</i>	
Holoprosencephaly	2 <i>0.8</i>	3 <i>2.5</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>1.6</i>	
Hypoplastic left heart syndrome	10 <i>4.1</i>	5 <i>4.2</i>	6 <i>10.5</i>	0 <i>0.0</i>	1 <i>119.0</i>	22 <i>4.9</i>	
Hypospadias*	131 <i>104.8</i>	45 <i>73.4</i>	13 <i>44.3</i>	10 <i>90.3</i>	0 <i>0.0</i>	200 <i>87.4</i>	
Limb deficiencies (reduction defects)	13 <i>5.3</i>	13 <i>10.8</i>	4 <i>7.0</i>	2 <i>9.3</i>	0 <i>0.0</i>	32 <i>7.1</i>	5

Delaware**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	3 <i>1.2</i>	4 <i>3.3</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>2.0</i>	
Pulmonary valve atresia and stenosis	31 <i>12.6</i>	21 <i>17.4</i>	10 <i>17.4</i>	0 <i>0.0</i>	1 <i>119.0</i>	63 <i>14.0</i>	6
Pulmonary valve atresia	10 <i>4.1</i>	4 <i>3.3</i>	4 <i>7.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>4.0</i>	
Rectal and large intestinal atresia/stenosis	12 <i>4.9</i>	1 <i>0.8</i>	2 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>3.3</i>	
Renal agenesis/hypoplasia	22 <i>9.0</i>	5 <i>4.2</i>	5 <i>8.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	32 <i>7.1</i>	
Single ventricle	4 <i>1.6</i>	0 <i>0.0</i>	1 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>1.1</i>	
Small intestinal atresia/stenosis	7 <i>2.9</i>	4 <i>3.3</i>	3 <i>5.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	14 <i>3.1</i>	
Spina bifida without anencephalus	6 <i>2.4</i>	1 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>1.6</i>	7
Tetralogy of Fallot	7 <i>2.9</i>	3 <i>2.5</i>	1 <i>1.7</i>	3 <i>14.0</i>	0 <i>0.0</i>	14 <i>3.1</i>	8
Total anomalous pulmonary venous connection	4 <i>2.2</i>	0 <i>0.0</i>	2 <i>4.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>1.8</i>	
Transposition of the great arteries (TGA)	8 <i>3.3</i>	2 <i>1.7</i>	3 <i>5.2</i>	1 <i>4.7</i>	0 <i>0.0</i>	14 <i>3.1</i>	
Dextro-transposition of great arteries (d-TGA)	6 <i>2.4</i>	2 <i>1.7</i>	2 <i>3.5</i>	1 <i>4.7</i>	0 <i>0.0</i>	11 <i>2.5</i>	
Tricuspid valve atresia and stenosis	4 <i>1.6</i>	7 <i>5.8</i>	1 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>2.7</i>	
Trisomy 13	4 <i>1.6</i>	1 <i>0.8</i>	2 <i>3.5</i>	1 <i>4.7</i>	0 <i>0.0</i>	8 <i>1.8</i>	
Trisomy 18	11 <i>4.5</i>	3 <i>2.5</i>	4 <i>7.0</i>	1 <i>4.7</i>	0 <i>0.0</i>	19 <i>4.2</i>	
Trisomy 21 (Down syndrome)	33 <i>13.5</i>	12 <i>10.0</i>	5 <i>8.7</i>	5 <i>23.3</i>	0 <i>0.0</i>	56 <i>12.5</i>	
Turner syndrome†	7 <i>5.8</i>	0 <i>0.0</i>	2 <i>7.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>4.1</i>	
Ventricular septal defect	209 <i>85.2</i>	79 <i>65.6</i>	56 <i>97.6</i>	18 <i>83.7</i>	0 <i>0.0</i>	364 <i>81.1</i>	9
Total live births	24531	12039	5736	2150	84	44869	
Male live births	12498	6129	2935	1108	43	22876	
Female live births	12033	5910	2801	1042	41	21993	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Delaware**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	33 <i>8.6</i>	1 <i>1.6</i>	34 <i>7.6</i>	
Trisomy 13	6 <i>1.6</i>	2 <i>3.2</i>	8 <i>1.8</i>	
Trisomy 18	8 <i>2.1</i>	11 <i>17.4</i>	19 <i>4.2</i>	
Trisomy 21 (Down syndrome)	28 <i>7.3</i>	28 <i>44.4</i>	56 <i>12.5</i>	
Total live births	38562	6307	44869	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include atrial septal fenestrations. Data exclude atrial septal defects that self-close (not present after a month), which are considered patent foramen ovals.
- 2.Data for this condition include Pierre Robin anomalies with cleft palate.
- 3.Data for this condition include interrupted aortic arch.
- 4.Data for this condition limited to cases where surgical intervention is required.
- 5.Data for this condition include complex hand anomalies, adactyly, and syndactyly.
- 6.Data for this condition exclude peripheral, branch, trivial, or limited cases.
- 7.Data for this condition exclude spina bifida occulta.
- 8.Data for this condition include ventricular septal defect with overriding aorta.
- 9.Data for this condition include probable cases if the defect was found prenatally and the fetus died without a confirmatory autopsy.

General comments

- All chromosomal defects require a cytogenetics report.
- All heart defects require an echocardiogram report. Trivial or limited defects are excluded. State did not perform CCHD screening in 2009 and 2010.
- Fetal deaths (including terminations) are included if the fetus weighed 350 grams or greater or 20 weeks or more gestation. State does not distinguish spontaneous terminations from elective terminations - stillbirths, miscarriages, and terminations are reported together.

Florida**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	39 <i>0.8</i>	21 <i>0.9</i>	19 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	80 <i>0.7</i>	
Anophthalmia/microphthalmia	42 <i>0.9</i>	24 <i>1.0</i>	37 <i>1.2</i>	<5 <i>.</i>	0 <i>0.0</i>	104 <i>1.0</i>	
Anotia/microtia	27 <i>0.6</i>	9 <i>0.4</i>	45 <i>1.5</i>	7 <i>2.2</i>	0 <i>0.0</i>	92 <i>0.9</i>	
Aortic valve stenosis	73 <i>1.5</i>	17 <i>0.7</i>	32 <i>1.1</i>	<5 <i>.</i>	<5 <i>.</i>	131 <i>1.2</i>	
Atrial septal defect	4884 <i>103.0</i>	3079 <i>128.8</i>	3995 <i>134.8</i>	284 <i>89.9</i>	23 <i>155.3</i>	12581 <i>117.7</i>	
Atrioventricular septal defect (Endocardial cushion defect)	210 <i>4.4</i>	119 <i>5.0</i>	100 <i>3.4</i>	16 <i>5.1</i>	<5 <i>.</i>	460 <i>4.3</i>	1
Biliary atresia	38 <i>0.8</i>	37 <i>1.5</i>	17 <i>0.6</i>	<5 <i>.</i>	0 <i>0.0</i>	97 <i>0.9</i>	
Bladder exstrophy	12 <i>0.3</i>	6 <i>0.3</i>	5 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.2</i>	
Choanal atresia	84 <i>1.8</i>	35 <i>1.5</i>	57 <i>1.9</i>	5 <i>1.6</i>	<5 <i>.</i>	186 <i>1.7</i>	
Cleft lip alone	126 <i>2.7</i>	35 <i>1.5</i>	52 <i>1.8</i>	<5 <i>.</i>	0 <i>0.0</i>	226 <i>2.1</i>	
Cleft lip with cleft palate	278 <i>5.9</i>	81 <i>3.4</i>	134 <i>4.5</i>	18 <i>5.7</i>	<5 <i>.</i>	524 <i>4.9</i>	
Cleft palate alone	316 <i>6.7</i>	98 <i>4.1</i>	143 <i>4.8</i>	20 <i>6.3</i>	0 <i>0.0</i>	592 <i>5.5</i>	
Cloacal exstrophy	308 <i>6.5</i>	163 <i>6.8</i>	203 <i>6.8</i>	14 <i>4.4</i>	<5 <i>.</i>	714 <i>6.7</i>	
Clubfoot	764 <i>16.1</i>	248 <i>10.4</i>	366 <i>12.3</i>	39 <i>12.3</i>	<5 <i>.</i>	1451 <i>13.6</i>	
Coarctation of the aorta	386 <i>8.1</i>	153 <i>6.4</i>	177 <i>6.0</i>	19 <i>6.0</i>	<5 <i>.</i>	760 <i>7.1</i>	
Common truncus (truncus arteriosus)	37 <i>0.8</i>	20 <i>0.8</i>	18 <i>0.6</i>	<5 <i>.</i>	0 <i>0.0</i>	79 <i>0.7</i>	
Congenital cataract	84 <i>1.8</i>	32 <i>1.3</i>	31 <i>1.0</i>	<5 <i>.</i>	0 <i>0.0</i>	153 <i>1.4</i>	
Congenital posterior urethral valves	66 <i>1.4</i>	60 <i>2.5</i>	27 <i>0.9</i>	<5 <i>.</i>	0 <i>0.0</i>	159 <i>1.5</i>	
Deletion 22q11.2	21 <i>0.4</i>	5 <i>0.2</i>	7 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	33 <i>0.3</i>	
Diaphragmatic hernia	163 <i>3.4</i>	79 <i>3.3</i>	89 <i>3.0</i>	7 <i>2.2</i>	<5 <i>.</i>	352 <i>3.3</i>	
Double outlet right ventricle	110 <i>2.3</i>	65 <i>2.7</i>	73 <i>2.5</i>	9 <i>2.8</i>	<5 <i>.</i>	270 <i>2.5</i>	
Ebstein anomaly	36 <i>0.8</i>	12 <i>0.5</i>	13 <i>0.4</i>	<5 <i>.</i>	<5 <i>.</i>	67 <i>0.6</i>	
Encephalocele	35 <i>0.7</i>	32 <i>1.3</i>	24 <i>0.8</i>	<5 <i>.</i>	0 <i>0.0</i>	94 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	123 <i>2.6</i>	53 <i>2.2</i>	63 <i>2.1</i>	5 <i>1.6</i>	<5 <i>.</i>	250 <i>2.3</i>	
Gastroschisis	304 <i>6.4</i>	67 <i>2.8</i>	130 <i>4.4</i>	11 <i>3.5</i>	<5 <i>.</i>	522 <i>4.9</i>	2
Holoprosencephaly	215 <i>4.5</i>	132 <i>5.5</i>	130 <i>4.4</i>	16 <i>5.1</i>	0 <i>0.0</i>	505 <i>4.7</i>	
Hypoplastic left heart syndrome	156 <i>3.3</i>	95 <i>4.0</i>	71 <i>2.4</i>	8 <i>2.5</i>	0 <i>0.0</i>	337 <i>3.2</i>	
Hypospadias*	2153 <i>88.5</i>	859 <i>70.6</i>	836 <i>55.2</i>	89 <i>54.7</i>	<5 <i>.</i>	4041 <i>73.9</i>	
Interrupted aortic arch	26 <i>0.5</i>	15 <i>0.6</i>	22 <i>0.7</i>	<5 <i>.</i>	0 <i>0.0</i>	68 <i>0.6</i>	
Limb deficiencies (reduction defects)	189 <i>4.0</i>	89 <i>3.7</i>	98 <i>3.3</i>	15 <i>4.7</i>	<5 <i>.</i>	399 <i>3.7</i>	

Florida**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	99 <i>2.1</i>	73 <i>3.1</i>	39 <i>1.3</i>	<5 .	0 <i>0.0</i>	217 <i>2.0</i>	2
Pulmonary valve atresia and stenosis	407 <i>8.6</i>	320 <i>13.4</i>	290 <i>9.8</i>	23 <i>7.3</i>	0 <i>0.0</i>	1066 <i>10.0</i>	
Pulmonary valve atresia	65 <i>1.4</i>	45 <i>1.9</i>	51 <i>1.7</i>	<5 .	0 <i>0.0</i>	170 <i>1.6</i>	
Rectal and large intestinal atresia/stenosis	182 <i>3.8</i>	119 <i>5.0</i>	141 <i>4.8</i>	7 <i>2.2</i>	<5 .	471 <i>4.4</i>	
Renal agenesis/hypoplasia	272 <i>5.7</i>	141 <i>5.9</i>	145 <i>4.9</i>	11 <i>3.5</i>	<5 .	582 <i>5.4</i>	
Single ventricle	51 <i>1.1</i>	47 <i>2.0</i>	37 <i>1.2</i>	6 <i>1.9</i>	0 <i>0.0</i>	145 <i>1.4</i>	
Small intestinal atresia/stenosis	251 <i>5.3</i>	129 <i>5.4</i>	139 <i>4.7</i>	22 <i>7.0</i>	0 <i>0.0</i>	552 <i>5.2</i>	
Spina bifida without anencephalus	167 <i>3.5</i>	54 <i>2.3</i>	81 <i>2.7</i>	10 <i>3.2</i>	0 <i>0.0</i>	315 <i>2.9</i>	
Tetralogy of Fallot	257 <i>5.4</i>	131 <i>5.5</i>	118 <i>4.0</i>	16 <i>5.1</i>	<5 .	543 <i>5.1</i>	
Total anomalous pulmonary venous connection	39 <i>0.8</i>	33 <i>1.4</i>	29 <i>1.0</i>	<5 .	0 <i>0.0</i>	106 <i>1.0</i>	
Transposition of the great arteries (TGA)	162 <i>3.4</i>	42 <i>1.8</i>	59 <i>2.0</i>	<5 .	<5 .	277 <i>2.6</i>	
Dextro-transposition of great arteries (d-TGA)	137 <i>2.9</i>	34 <i>1.4</i>	52 <i>1.8</i>	<5 .	<5 .	236 <i>2.2</i>	
Tricuspid valve atresia and stenosis	44 <i>0.9</i>	38 <i>1.6</i>	25 <i>0.8</i>	<5 .	0 <i>0.0</i>	114 <i>1.1</i>	3
Trisomy 13	51 <i>1.1</i>	33 <i>1.4</i>	23 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	108 <i>1.0</i>	
Trisomy 18	82 <i>1.7</i>	65 <i>2.7</i>	57 <i>1.9</i>	6 <i>1.9</i>	0 <i>0.0</i>	219 <i>2.0</i>	
Trisomy 21 (Down syndrome)	640 <i>13.5</i>	303 <i>12.7</i>	413 <i>13.9</i>	53 <i>16.8</i>	<5 .	1457 <i>13.6</i>	
Turner syndrome†	33 <i>1.4</i>	14 <i>1.2</i>	24 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	73 <i>1.4</i>	
Ventricular septal defect	2980 <i>62.8</i>	1365 <i>57.1</i>	2088 <i>70.4</i>	180 <i>57.0</i>	9 <i>60.8</i>	6805 <i>63.7</i>	4
Total live births §	474163	238974	296401	31592	1481	1068594	
Male live births	243409	121602	151482	16279	776	546952	
Female live births	230751	117366	144916	15312	705	521627	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Florida**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	508 <i>5.6</i>	14 <i>0.9</i>	522 <i>4.9</i>	2
Trisomy 13	71 <i>0.8</i>	37 <i>2.3</i>	108 <i>1.0</i>	
Trisomy 18	118 <i>1.3</i>	101 <i>6.2</i>	219 <i>2.0</i>	
Trisomy 21 (Down syndrome)	741 <i>8.2</i>	716 <i>44.3</i>	1457 <i>13.6</i>	
Total live births	906777	161778	1068594	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include canal type atrioventricular septal defect.
- 2.Data for this condition may differ from previous reports due to coding system changes.
- 3.Data for this condition include congenital tricuspid stenosis.
- 4.Data for this condition include probable cases.

Georgia (Metropolitan Atlanta Congenital Defects Program)
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	15 2.5	21 2.4	15 3.3	0 0.0	0 0.0	65 3.0	
Anophthalmia/microphthalmia	9 1.5	11 1.3	3 0.7	2 1.4	0 0.0	29 1.3	
Anotia/microtia	10 1.6	10 1.1	20 4.3	3 2.0	0 0.0	46 2.1	
Aortic valve stenosis	13 2.1	5 0.6	9 2.0	0 0.0	0 0.0	31 1.4	
Atrial septal defect	75 12.3	136 15.5	51 11.1	13 8.8	0 0.0	323 14.7	
Atrioventricular septal defect (Endocardial cushion defect)	37 6.1	65 7.4	17 3.7	3 2.0	1 67.6	144 6.5	
Biliary atresia	3 0.5	3 0.3	1 0.2	0 0.0	1 67.6	12 0.5	
Bladder exstrophy	3 0.5	2 0.2	0 0.0	0 0.0	0 0.0	6 0.3	
Choanal atresia	5 0.8	9 1.0	3 0.7	0 0.0	0 0.0	18 0.8	
Cleft lip alone	23 3.8	22 2.5	10 2.2	10 6.8	0 0.0	71 3.2	
Cleft lip with cleft palate	33 5.4	31 3.5	24 5.2	12 8.1	0 0.0	116 5.3	
Cleft palate alone	31 5.1	37 4.2	23 5.0	10 6.8	0 0.0	111 5.0	
Cloacal exstrophy	1 0.2	1 0.1	0 0.0	1 0.7	0 0.0	3 0.1	
Clubfoot	93 15.3	134 15.3	61 13.2	14 9.5	1 67.6	337 15.3	
Coarctation of the aorta	44 7.2	41 4.7	24 5.2	5 3.4	0 0.0	129 5.9	
Common truncus (truncus arteriosus)	4 0.7	5 0.6	2 0.4	2 1.4	0 0.0	14 0.6	
Congenital cataract	11 1.8	19 2.2	10 2.2	2 1.4	0 0.0	43 2.0	
Congenital posterior urethral valves	5 0.8	20 2.3	11 2.4	2 1.4	0 0.0	50 2.3	
Craniosynostosis	32 5.3	20 2.3	10 2.2	1 0.7	1 67.6	83 3.8	
Deletion 22q11.2	4 0.7	7 0.8	2 0.4	0 0.0	0 0.0	20 0.9	
Diaphragmatic hernia	15 2.5	24 2.7	16 3.5	2 1.4	0 0.0	75 3.4	
Double outlet right ventricle	12 2.0	20 2.3	11 2.4	3 2.0	0 0.0	51 2.3	
Ebstein anomaly	0 0.0	4 0.5	4 0.9	2 1.4	0 0.0	11 0.5	
Encephalocele	2 0.3	7 0.8	4 0.9	3 2.0	1 67.6	25 1.1	
Esophageal atresia/tracheoesophageal fistula	21 3.4	18 2.1	7 1.5	0 0.0	0 0.0	51 2.3	
Gastroschisis	23 3.8	28 3.2	22 4.8	3 2.0	0 0.0	86 3.9	
Holoprosencephaly	19 3.1	20 2.3	9 2.0	5 3.4	0 0.0	62 2.8	
Hypoplastic left heart syndrome	20 3.3	20 2.3	7 1.5	6 4.1	0 0.0	60 2.7	
Hypospadias*	244 77.8	305 68.4	71 30.2	24 32.1	3 411.0	727 64.7	
Interrupted aortic arch	4 0.7	3 0.3	0 0.0	0 0.0	0 0.0	11 0.5	

Georgia (Metropolitan Atlanta Congenital Defects Program)
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	21 3.4	44 5.0	20 4.3	1 0.7	0 0.0	100 4.5	
Omphalocele	18 3.0	35 4.0	9 2.0	3 2.0	1 67.6	84 3.8	
Pulmonary valve atresia and stenosis	47 7.7	67 7.7	31 6.7	8 5.4	1 67.6	181 8.2	
Pulmonary valve atresia	14 2.3	22 2.5	13 2.8	2 1.4	0 0.0	61 2.8	
Rectal and large intestinal atresia/stenosis	29 4.8	26 3.0	26 5.6	7 4.7	0 0.0	97 4.4	
Renal agenesis/hypoplasia	48 7.9	62 7.1	20 4.3	10 6.8	1 67.6	160 7.3	
Single ventricle	3 0.5	11 1.3	9 2.0	2 1.4	0 0.0	30 1.4	
Small intestinal atresia/stenosis	21 3.4	33 3.8	13 2.8	4 2.7	0 0.0	80 3.6	
Spina bifida without anencephalus	30 4.9	29 3.3	22 4.8	2 1.4	0 0.0	94 4.3	
Tetralogy of Fallot	37 6.1	37 4.2	8 1.7	6 4.1	0 0.0	103 4.7	
Total anomalous pulmonary venous connection	6 1.0	6 0.7	9 2.0	5 3.4	0 0.0	29 1.3	
Transposition of the great arteries (TGA)	30 4.9	24 2.7	13 2.8	0 0.0	0 0.0	74 3.4	
Dextro-transposition of great arteries (d-TGA)	28 4.6	18 2.1	7 1.5	0 0.0	0 0.0	59 2.7	
Tricuspid valve atresia and stenosis	11 1.8	16 1.8	9 2.0	3 2.0	0 0.0	47 2.1	
Tricuspid valve atresia	7 1.1	6 0.7	3 0.7	2 1.4	0 0.0	20 0.9	
Trisomy 13	17 2.8	22 2.5	4 0.9	1 0.7	0 0.0	54 2.5	
Trisomy 18	41 6.7	38 4.3	14 3.0	6 4.1	1 67.6	125 5.7	
Trisomy 21 (Down syndrome)	148 24.3	127 14.5	92 20.0	22 14.9	1 67.6	459 20.9	
Turner syndrome†	16 5.4	20 4.7	2 0.9	5 6.9	0 0.0	51 4.7	
Ventricular septal defect	388 63.7	369 42.2	245 53.2	52 35.3	5 337.8	1192 54.2	
Total live births §	60878	87532	46079	14749	148	220109	
Male live births	31347	44578	23497	7473	73	112425	
Female live births	29531	42950	22582	7275	75	107678	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Georgia (Metropolitan Atlanta Congenital Defects Program)
Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	77 <i>4.4</i>	5 <i>1.1</i>	86 <i>3.9</i>	
Trisomy 13	33 <i>1.9</i>	21 <i>4.5</i>	54 <i>2.5</i>	
Trisomy 18	41 <i>2.4</i>	79 <i>17.0</i>	125 <i>5.7</i>	
Trisomy 21 (Down syndrome)	203 <i>11.7</i>	237 <i>50.9</i>	459 <i>20.9</i>	
Total live births	173567	46535	220109	

**Total includes unknown maternal age

General comments

- Cases for which the date of delivery was unknown are included in the year of their last prenatal test.
- Data include pregnancies with a prenatal diagnosis at any gestational age for which the outcome could not be documented from available data sources.
- Elective terminations include all gestational ages.
- Live births include gestational ages greater than or equal to 20 weeks.
- Prior to 2012 data include 5 counties. Data for 2012-2013 include 3 of the 5 counties.
- Stillbirths include gestational ages greater than or equal to 20 weeks.

Hawaii**Birth Defects Counts and Prevalence 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	2 4.7	0 0.0	0 0.0	1 0.7	0 0.0	4 2.1	
Anotia/microtia	1 2.3	0 0.0	0 0.0	0 0.0	0 0.0	1 0.5	
Atrial septal defect	7 16.3	0 0.0	4 134.2	18 13.3	0 0.0	35 18.5	
Atrioventricular septal defect (Endocardial cushion defect)	1 2.3	0 0.0	1 33.6	3 2.2	0 0.0	5 2.6	
Biliary atresia	1 2.3	0 0.0	0 0.0	2 1.5	0 0.0	3 1.6	
Bladder exstrophy	1 2.3	0 0.0	0 0.0	0 0.0	0 0.0	1 0.5	
Choanal atresia	1 2.3	0 0.0	0 0.0	0 0.0	0 0.0	1 0.5	
Cleft lip alone	3 7.0	0 0.0	2 67.1	8 5.9	0 0.0	14 7.4	
Cleft lip with cleft palate	1 2.3	0 0.0	0 0.0	7 5.2	0 0.0	9 4.7	
Cleft palate alone	2 4.7	0 0.0	0 0.0	4 3.0	0 0.0	7 3.7	
Coarctation of the aorta	1 2.3	0 0.0	0 0.0	3 2.2	0 0.0	4 2.1	
Ebstein anomaly	0 0.0	0 0.0	0 0.0	1 0.7	0 0.0	1 0.5	
Encephalocele	0 0.0	0 0.0	0 0.0	2 1.5	0 0.0	2 1.1	
Esophageal atresia/tracheoesophageal fistula	1 2.3	0 0.0	0 0.0	3 2.2	0 0.0	5 2.6	
Gastroschisis	2 4.7	0 0.0	0 0.0	9 6.7	0 0.0	12 6.3	
Hypoplastic left heart syndrome	0 0.0	0 0.0	0 0.0	2 1.5	0 0.0	3 1.6	
Hypospadias*	6 27.6	0 0.0	2 123.5	40 57.8	0 0.0	54 56.0	
Omphalocele	0 0.0	0 0.0	1 33.6	3 2.2	0 0.0	4 2.1	
Pulmonary valve atresia and stenosis	5 11.7	0 0.0	1 33.6	5 3.7	0 0.0	12 6.3	
Pulmonary valve atresia	0 0.0	0 0.0	0 0.0	2 1.5	0 0.0	2 1.1	
Rectal and large intestinal atresia/stenosis	3 7.0	0 0.0	0 0.0	8 5.9	0 0.0	12 6.3	
Renal agenesis/hypoplasia	1 2.3	0 0.0	0 0.0	6 4.4	0 0.0	8 4.2	
Spina bifida without anencephalus	0 0.0	0 0.0	0 0.0	1 0.7	0 0.0	1 0.5	
Tetralogy of Fallot	1 2.3	0 0.0	0 0.0	1 0.7	0 0.0	2 1.1	
Total anomalous pulmonary venous connection	0 0.0	0 0.0	0 0.0	2 1.5	0 0.0	2 1.1	
Transposition of the great arteries (TGA)	0 0.0	1 20.0	1 33.6	6 4.4	0 0.0	8 4.2	
Tricuspid valve atresia and stenosis	0 0.0	0 0.0	1 33.6	3 2.2	0 0.0	4 2.1	
Tricuspid valve atresia	0 0.0	0 0.0	1 33.6	3 2.2	0 0.0	4 2.1	
Trisomy 13	0 0.0	0 0.0	0 0.0	2 1.5	0 0.0	2 1.1	
Trisomy 18	3 7.0	0 0.0	1 33.6	6 4.4	0 0.0	15 7.9	

Hawaii**Birth Defects Counts and Prevalence 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Trisomy 21 (Down syndrome)	5 <i>11.7</i>	0 <i>0.0</i>	2 <i>67.1</i>	14 <i>10.3</i>	0 <i>0.0</i>	29 <i>15.3</i>	
Turner syndrome†	1 <i>4.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>1.5</i>	0 <i>0.0</i>	2 <i>2.2</i>	
Ventricular septal defect	8 <i>18.7</i>	0 <i>0.0</i>	4 <i>134.2</i>	29 <i>21.4</i>	0 <i>0.0</i>	50 <i>26.4</i>	
Total live births §	4282	501	298	13532	237	18965	
Male live births	2172	251	162	6918	113	9645	
Female live births	2110	250	136	6614	124	9263	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Hawaii**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	12 7.7	0 0.0	12 6.3	
Trisomy 13	1 0.6	1 3.0	2 1.1	
Trisomy 18	8 5.2	7 20.7	15 7.9	
Trisomy 21 (Down syndrome)	13 8.4	16 47.3	29 15.3	
Total live births	15497	3382	18965	

**Total includes unknown maternal age

General comments

-Fetal deaths are defined as baby born dead (without heart rate or respiration) during or after 18th gestation week; includes babies that died during childbirth.

-Terminations limited to 20 weeks gestation and 350 gms.

Illinois**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	55 <i>1.3</i>	15 <i>1.1</i>	46 <i>2.6</i>	3 <i>0.6</i>	0 <i>0.0</i>	122 <i>1.5</i>	
Anophthalmia/microphthalmia	62 <i>1.4</i>	19 <i>1.4</i>	32 <i>1.8</i>	5 <i>1.0</i>	0 <i>0.0</i>	118 <i>1.5</i>	
Anotia/microtia	54 <i>1.2</i>	9 <i>0.6</i>	73 <i>4.1</i>	13 <i>2.7</i>	0 <i>0.0</i>	149 <i>1.9</i>	
Aortic valve stenosis	58 <i>1.3</i>	8 <i>0.6</i>	28 <i>1.6</i>	4 <i>0.8</i>	0 <i>0.0</i>	98 <i>1.2</i>	
Atrial septal defect	1115 <i>25.8</i>	404 <i>29.0</i>	490 <i>27.7</i>	132 <i>27.2</i>	7 <i>46.6</i>	2149 <i>26.7</i>	
Atrioventricular septal defect (Endocardial cushion defect)	223 <i>5.2</i>	89 <i>6.4</i>	82 <i>4.6</i>	13 <i>2.7</i>	0 <i>0.0</i>	408 <i>5.1</i>	1
Biliary atresia	5 <i>0.1</i>	6 <i>0.4</i>	5 <i>0.3</i>	2 <i>0.4</i>	0 <i>0.0</i>	18 <i>0.2</i>	
Bladder exstrophy	14 <i>0.3</i>	2 <i>0.1</i>	5 <i>0.3</i>	1 <i>0.2</i>	0 <i>0.0</i>	23 <i>0.3</i>	
Choanal atresia	53 <i>1.2</i>	17 <i>1.2</i>	19 <i>1.1</i>	4 <i>0.8</i>	0 <i>0.0</i>	93 <i>1.2</i>	
Cleft lip alone	173 <i>4.0</i>	42 <i>3.0</i>	54 <i>3.0</i>	18 <i>3.7</i>	2 <i>13.3</i>	289 <i>3.6</i>	
Cleft lip with cleft palate	194 <i>4.5</i>	49 <i>3.5</i>	119 <i>6.7</i>	31 <i>6.4</i>	1 <i>6.7</i>	394 <i>4.9</i>	
Cleft palate alone	251 <i>5.8</i>	55 <i>3.9</i>	101 <i>5.7</i>	21 <i>4.3</i>	0 <i>0.0</i>	429 <i>5.3</i>	
Cloacal exstrophy	5 <i>0.1</i>	3 <i>0.2</i>	1 <i>0.1</i>	1 <i>0.2</i>	0 <i>0.0</i>	10 <i>0.1</i>	
Clubfoot	287 <i>6.6</i>	71 <i>5.1</i>	132 <i>7.5</i>	19 <i>3.9</i>	0 <i>0.0</i>	511 <i>6.4</i>	
Coarctation of the aorta	159 <i>3.7</i>	39 <i>2.8</i>	85 <i>4.8</i>	14 <i>2.9</i>	1 <i>6.7</i>	298 <i>3.7</i>	
Common truncus (truncus arteriosus)	29 <i>0.7</i>	7 <i>0.5</i>	12 <i>0.7</i>	1 <i>0.2</i>	0 <i>0.0</i>	50 <i>0.6</i>	
Congenital cataract	28 <i>0.6</i>	20 <i>1.4</i>	7 <i>0.4</i>	2 <i>0.4</i>	0 <i>0.0</i>	57 <i>0.7</i>	
Congenital posterior urethral valves	23 <i>0.5</i>	16 <i>1.1</i>	9 <i>0.5</i>	1 <i>0.2</i>	0 <i>0.0</i>	49 <i>0.6</i>	
Craniosynostosis	35 <i>0.8</i>	8 <i>0.6</i>	21 <i>1.2</i>	1 <i>0.2</i>	0 <i>0.0</i>	65 <i>0.8</i>	
Deletion 22q11.2	35 <i>0.8</i>	18 <i>1.3</i>	12 <i>0.7</i>	2 <i>0.4</i>	0 <i>0.0</i>	67 <i>0.8</i>	
Diaphragmatic hernia	123 <i>2.8</i>	32 <i>2.3</i>	37 <i>2.1</i>	10 <i>2.1</i>	1 <i>6.7</i>	205 <i>2.6</i>	
Double outlet right ventricle	58 <i>1.3</i>	27 <i>1.9</i>	36 <i>2.0</i>	12 <i>2.5</i>	1 <i>6.7</i>	134 <i>1.7</i>	
Ebstein anomaly	25 <i>0.6</i>	3 <i>0.2</i>	16 <i>0.9</i>	2 <i>0.4</i>	0 <i>0.0</i>	46 <i>0.6</i>	
Encephalocele	19 <i>0.4</i>	14 <i>1.0</i>	27 <i>1.5</i>	4 <i>0.8</i>	0 <i>0.0</i>	65 <i>0.8</i>	
Esophageal atresia/tracheoesophageal fistula	113 <i>2.6</i>	25 <i>1.8</i>	48 <i>2.7</i>	9 <i>1.9</i>	0 <i>0.0</i>	195 <i>2.4</i>	
Gastroschisis	157 <i>3.6</i>	63 <i>4.5</i>	91 <i>5.1</i>	2 <i>0.4</i>	0 <i>0.0</i>	313 <i>3.9</i>	
Holoprosencephaly	32 <i>0.7</i>	9 <i>0.6</i>	25 <i>1.4</i>	0 <i>0.0</i>	1 <i>6.7</i>	70 <i>0.9</i>	
Hypoplastic left heart syndrome	72 <i>1.7</i>	34 <i>2.4</i>	40 <i>2.3</i>	6 <i>1.2</i>	1 <i>6.7</i>	153 <i>1.9</i>	
Hypospadias*	1444 <i>64.9</i>	362 <i>51.0</i>	252 <i>27.9</i>	111 <i>44.5</i>	7 <i>92.1</i>	2176 <i>52.9</i>	
Interrupted aortic arch	21 <i>0.5</i>	15 <i>1.1</i>	6 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	42 <i>0.5</i>	

Illinois**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	209 <i>4.8</i>	80 <i>5.7</i>	92 <i>5.2</i>	17 <i>3.5</i>	0 <i>0.0</i>	400 <i>5.0</i>	
Omphalocele	87 <i>2.0</i>	32 <i>2.3</i>	24 <i>1.4</i>	6 <i>1.2</i>	1 <i>6.7</i>	150 <i>1.9</i>	
Pulmonary valve atresia and stenosis	130 <i>3.0</i>	67 <i>4.8</i>	68 <i>3.8</i>	12 <i>2.5</i>	0 <i>0.0</i>	277 <i>3.4</i>	
Pulmonary valve atresia	28 <i>0.6</i>	14 <i>1.0</i>	19 <i>1.1</i>	3 <i>0.6</i>	0 <i>0.0</i>	64 <i>0.8</i>	
Rectal and large intestinal atresia/stenosis	159 <i>3.7</i>	54 <i>3.9</i>	68 <i>3.8</i>	15 <i>3.1</i>	3 <i>20.0</i>	299 <i>3.7</i>	
Renal agenesis/hypoplasia	235 <i>5.4</i>	84 <i>6.0</i>	105 <i>5.9</i>	31 <i>6.4</i>	0 <i>0.0</i>	459 <i>5.7</i>	
Single ventricle	16 <i>0.4</i>	9 <i>0.6</i>	3 <i>0.2</i>	2 <i>0.4</i>	0 <i>0.0</i>	30 <i>0.4</i>	
Small intestinal atresia/stenosis	78 <i>1.8</i>	29 <i>2.1</i>	52 <i>2.9</i>	9 <i>1.9</i>	1 <i>6.7</i>	169 <i>2.1</i>	
Spina bifida without anencephalus	141 <i>3.3</i>	34 <i>2.4</i>	64 <i>3.6</i>	11 <i>2.3</i>	0 <i>0.0</i>	251 <i>3.1</i>	
Tetralogy of Fallot	128 <i>3.0</i>	49 <i>3.5</i>	65 <i>3.7</i>	22 <i>4.5</i>	2 <i>13.3</i>	267 <i>3.3</i>	
Total anomalous pulmonary venous connection	25 <i>0.6</i>	8 <i>0.6</i>	20 <i>1.1</i>	4 <i>0.8</i>	0 <i>0.0</i>	57 <i>0.7</i>	
Transposition of the great arteries (TGA)	105 <i>2.4</i>	26 <i>1.9</i>	50 <i>2.8</i>	9 <i>1.9</i>	0 <i>0.0</i>	190 <i>2.4</i>	
Dextro-transposition of great arteries (d-TGA)	87 <i>2.0</i>	25 <i>1.8</i>	39 <i>2.2</i>	8 <i>1.6</i>	0 <i>0.0</i>	159 <i>2.0</i>	
Tricuspid valve atresia and stenosis	95 <i>2.2</i>	36 <i>2.6</i>	58 <i>3.3</i>	5 <i>1.0</i>	1 <i>6.7</i>	195 <i>2.4</i>	2
Tricuspid valve atresia	22 <i>0.5</i>	9 <i>0.6</i>	15 <i>0.8</i>	1 <i>0.2</i>	0 <i>0.0</i>	47 <i>0.6</i>	3
Trisomy 13	52 <i>1.2</i>	17 <i>1.2</i>	25 <i>1.4</i>	4 <i>0.8</i>	1 <i>6.7</i>	101 <i>1.3</i>	
Trisomy 18	100 <i>2.3</i>	29 <i>2.1</i>	62 <i>3.5</i>	6 <i>1.2</i>	1 <i>6.7</i>	206 <i>2.6</i>	
Trisomy 21 (Down syndrome)	553 <i>12.8</i>	127 <i>9.1</i>	335 <i>18.9</i>	43 <i>8.9</i>	4 <i>26.6</i>	1066 <i>13.3</i>	
Turner syndrome†	41 <i>1.9</i>	9 <i>1.3</i>	19 <i>2.2</i>	1 <i>0.4</i>	0 <i>0.0</i>	71 <i>1.8</i>	
Ventricular septal defect	1864 <i>43.1</i>	473 <i>33.9</i>	836 <i>47.2</i>	185 <i>38.1</i>	16 <i>106.5</i>	3375 <i>42.0</i>	4
Total live births §	432818	139374	177101	48572	1502	803766	
Male live births	222380	70995	90233	24955	760	411565	
Female live births	210429	68371	86861	23617	742	392177	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Illinois**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	299 <i>4.4</i>	9 <i>0.7</i>	313 <i>3.9</i>	
Trisomy 13	70 <i>1.0</i>	25 <i>1.9</i>	101 <i>1.3</i>	
Trisomy 18	122 <i>1.8</i>	51 <i>3.9</i>	206 <i>2.6</i>	
Trisomy 21 (Down syndrome)	503 <i>7.5</i>	547 <i>42.0</i>	1066 <i>13.3</i>	
Total live births	673520	130184	803766	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include inlet ventricular septal defects including common atrioventricular canal type ventricular septal defect.
- 2.Data for this condition include tricuspid stenosis or hypoplasia.
- 3.Data for this condition exclude tricuspid stenosis or hypoplasia.
- 4.Data for this condition exclude probable cases, and inlet ventricular septal defects including common atrioventricular canal type ventricular septal defects.

General comments

-Data for all conditions include live births from birth to age 2 years and fetal deaths (these include stillbirths of 20 weeks gestation or more, and miscarriages where the families chose to hold funerals).

Iowa**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	42 <i>2.6</i>	3 <i>3.4</i>	5 <i>3.2</i>	1 <i>1.7</i>	0 <i>0.0</i>	52 <i>2.7</i>	
Anophthalmia/microphthalmia	26 <i>1.6</i>	0 <i>0.0</i>	4 <i>2.6</i>	1 <i>1.7</i>	1 <i>11.4</i>	33 <i>1.7</i>	
Anotia/microtia	29 <i>1.8</i>	1 <i>1.1</i>	10 <i>6.4</i>	1 <i>1.7</i>	0 <i>0.0</i>	42 <i>2.2</i>	
Aortic valve stenosis	47 <i>2.9</i>	1 <i>1.1</i>	3 <i>1.9</i>	2 <i>3.4</i>	0 <i>0.0</i>	54 <i>2.8</i>	
Atrial septal defect	497 <i>30.9</i>	39 <i>43.9</i>	49 <i>31.2</i>	11 <i>18.5</i>	0 <i>0.0</i>	605 <i>31.2</i>	
Atrioventricular septal defect (Endocardial cushion defect)	93 <i>5.8</i>	11 <i>12.4</i>	13 <i>8.3</i>	4 <i>6.7</i>	0 <i>0.0</i>	121 <i>6.2</i>	
Biliary atresia	7 <i>0.4</i>	1 <i>1.1</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>0.5</i>	
Bladder exstrophy	7 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.4</i>	
Choanal atresia	28 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>1.4</i>	1
Cleft lip alone	59 <i>3.7</i>	4 <i>4.5</i>	6 <i>3.8</i>	2 <i>3.4</i>	0 <i>0.0</i>	71 <i>3.7</i>	
Cleft lip with cleft palate	92 <i>5.7</i>	4 <i>4.5</i>	10 <i>6.4</i>	5 <i>8.4</i>	0 <i>0.0</i>	111 <i>5.7</i>	
Cleft palate alone	120 <i>7.5</i>	4 <i>4.5</i>	9 <i>5.7</i>	5 <i>8.4</i>	0 <i>0.0</i>	139 <i>7.2</i>	
Cloacal exstrophy	2 <i>0.1</i>	0 <i>0.0</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.2</i>	
Clubfoot	269 <i>16.7</i>	12 <i>13.5</i>	26 <i>16.6</i>	11 <i>18.5</i>	1 <i>11.4</i>	320 <i>16.5</i>	
Coarctation of the aorta	95 <i>5.9</i>	2 <i>2.3</i>	10 <i>6.4</i>	1 <i>1.7</i>	0 <i>0.0</i>	109 <i>5.6</i>	
Common truncus (truncus arteriosus)	6 <i>0.4</i>	0 <i>0.0</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.4</i>	
Congenital cataract	64 <i>4.0</i>	2 <i>2.3</i>	4 <i>2.6</i>	1 <i>1.7</i>	2 <i>22.7</i>	74 <i>3.8</i>	
Congenital posterior urethral valves	19 <i>1.2</i>	1 <i>1.1</i>	0 <i>0.0</i>	2 <i>3.4</i>	1 <i>11.4</i>	23 <i>1.2</i>	
Craniosynostosis	119 <i>7.4</i>	4 <i>4.5</i>	12 <i>7.7</i>	4 <i>6.7</i>	0 <i>0.0</i>	139 <i>7.2</i>	
Deletion 22q11.2	22 <i>1.4</i>	1 <i>1.1</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>1.2</i>	
Diaphragmatic hernia	44 <i>2.7</i>	3 <i>3.4</i>	4 <i>2.6</i>	2 <i>3.4</i>	0 <i>0.0</i>	55 <i>2.8</i>	
Double outlet right ventricle	30 <i>1.9</i>	6 <i>6.8</i>	6 <i>3.8</i>	1 <i>1.7</i>	0 <i>0.0</i>	46 <i>2.4</i>	
Ebstein anomaly	13 <i>0.8</i>	1 <i>1.1</i>	0 <i>0.0</i>	1 <i>1.7</i>	0 <i>0.0</i>	15 <i>0.8</i>	
Encephalocele	16 <i>1.0</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	17 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	53 <i>3.3</i>	1 <i>1.1</i>	2 <i>1.3</i>	1 <i>1.7</i>	0 <i>0.0</i>	57 <i>2.9</i>	
Gastroschisis	90 <i>5.6</i>	8 <i>9.0</i>	18 <i>11.5</i>	1 <i>1.7</i>	1 <i>11.4</i>	120 <i>6.2</i>	
Holoprosencephaly	26 <i>1.6</i>	4 <i>4.5</i>	3 <i>1.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	33 <i>1.7</i>	
Hypoplastic left heart syndrome	42 <i>2.6</i>	5 <i>5.6</i>	6 <i>3.8</i>	2 <i>3.4</i>	0 <i>0.0</i>	55 <i>2.8</i>	
Hypospadias*	519 <i>63.2</i>	21 <i>46.0</i>	26 <i>33.3</i>	8 <i>26.1</i>	0 <i>0.0</i>	577 <i>58.3</i>	
Interrupted aortic arch	10 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	10 <i>0.5</i>	

Iowa**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	96 <i>6.0</i>	4 <i>4.5</i>	12 <i>7.7</i>	5 <i>8.4</i>	0 <i>0.0</i>	117 <i>6.0</i>	2
Omphalocele	35 <i>2.2</i>	3 <i>3.4</i>	6 <i>3.8</i>	1 <i>1.7</i>	0 <i>0.0</i>	48 <i>2.5</i>	
Pulmonary valve atresia and stenosis	215 <i>13.4</i>	15 <i>16.9</i>	15 <i>9.6</i>	11 <i>18.5</i>	0 <i>0.0</i>	258 <i>13.3</i>	
Pulmonary valve atresia	19 <i>1.2</i>	1 <i>1.1</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	22 <i>1.1</i>	
Rectal and large intestinal atresia/stenosis	67 <i>4.2</i>	5 <i>5.6</i>	14 <i>8.9</i>	1 <i>1.7</i>	0 <i>0.0</i>	87 <i>4.5</i>	
Renal agenesis/hypoplasia	91 <i>5.7</i>	4 <i>4.5</i>	7 <i>4.5</i>	5 <i>8.4</i>	0 <i>0.0</i>	108 <i>5.6</i>	
Single ventricle	8 <i>0.5</i>	3 <i>3.4</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.6</i>	
Small intestinal atresia/stenosis	53 <i>3.3</i>	3 <i>3.4</i>	10 <i>6.4</i>	1 <i>1.7</i>	0 <i>0.0</i>	69 <i>3.6</i>	
Spina bifida without anencephalus	61 <i>3.8</i>	3 <i>3.4</i>	15 <i>9.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	80 <i>4.1</i>	
Tetralogy of Fallot	62 <i>3.9</i>	4 <i>4.5</i>	4 <i>2.6</i>	3 <i>5.0</i>	1 <i>11.4</i>	74 <i>3.8</i>	
Total anomalous pulmonary venous connection	13 <i>0.8</i>	0 <i>0.0</i>	4 <i>2.6</i>	1 <i>1.7</i>	0 <i>0.0</i>	18 <i>0.9</i>	
Transposition of the great arteries (TGA)	44 <i>2.7</i>	4 <i>4.5</i>	6 <i>3.8</i>	3 <i>5.0</i>	0 <i>0.0</i>	58 <i>3.0</i>	
Dextro-transposition of great arteries (d-TGA)	39 <i>2.4</i>	3 <i>3.4</i>	5 <i>3.2</i>	3 <i>5.0</i>	0 <i>0.0</i>	50 <i>2.6</i>	
Tricuspid valve atresia and stenosis	34 <i>2.1</i>	3 <i>3.4</i>	4 <i>2.6</i>	0 <i>0.0</i>	1 <i>11.4</i>	42 <i>2.2</i>	
Tricuspid valve atresia	4 <i>0.2</i>	1 <i>1.1</i>	1 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Trisomy 13	24 <i>1.5</i>	2 <i>2.3</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>1.4</i>	
Trisomy 18	50 <i>3.1</i>	3 <i>3.4</i>	4 <i>2.6</i>	3 <i>5.0</i>	0 <i>0.0</i>	62 <i>3.2</i>	
Trisomy 21 (Down syndrome)	210 <i>13.1</i>	12 <i>13.5</i>	30 <i>19.1</i>	7 <i>11.8</i>	0 <i>0.0</i>	265 <i>13.7</i>	
Turner syndrome†	44 <i>5.6</i>	1 <i>2.3</i>	3 <i>3.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	49 <i>5.2</i>	
Ventricular septal defect	897 <i>55.8</i>	38 <i>42.8</i>	83 <i>52.9</i>	23 <i>38.6</i>	3 <i>34.1</i>	1053 <i>54.3</i>	
Total live births	160706	8875	15681	5953	880	194062	
Male live births	82112	4562	7801	3069	453	98988	
Female live births	78594	4313	7880	2884	427	95074	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Iowa**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	117 <i>6.8</i>	3 <i>1.4</i>	120 <i>6.2</i>	
Trisomy 13	21 <i>1.2</i>	7 <i>3.4</i>	28 <i>1.4</i>	
Trisomy 18	39 <i>2.3</i>	23 <i>11.0</i>	62 <i>3.2</i>	
Trisomy 21 (Down syndrome)	145 <i>8.4</i>	120 <i>57.5</i>	265 <i>13.7</i>	
Total live births	173179	20876	194062	

**Total includes unknown maternal age

Notes

- 1.Data for this condition exclude choanal stenosis.
- 2.Data for this condition exclude not otherwise specified and unspecified limb reductions

General comments

- Data for all conditions exclude probable/possible cases.
- Fetal deaths defined as 20 or more weeks gestation and/or 350 grams or greater.
- Terminations include all gestational ages.
- Unspecified non-live births includes spontaneous abortions.

Kansas**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	37 2.7	<5 .	13 4.1	<5 .	0 0.0	56 2.9	
Anophthalmia/microphthalmia	<5 .	0 0.0	0 0.0	0 0.0	0 0.0	<5 .	
Anotia/microtia	<5 .	0 0.0	<5 .	0 0.0	0 0.0	5 0.3	
Aortic valve stenosis	<5 .	0 0.0	<5 .	0 0.0	0 0.0	5 0.3	
Atrial septal defect	129 9.3	39 29.4	72 22.9	<5 .	<5 .	295 15.2	1
Atrioventricular septal defect (Endocardial cushion defect)	17 1.2	<5 .	<5 .	0 0.0	0 0.0	23 1.2	
Biliary atresia	<5 .	0 0.0	<5 .	<5 .	0 0.0	<5 .	
Bladder exstrophy	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	<5 .	
Choanal atresia	<5 .	0 0.0	<5 .	0 0.0	0 0.0	8 0.4	
Cleft lip alone	11 0.8	<5 .	<5 .	<5 .	0 0.0	18 0.9	
Cleft lip with cleft palate	29 2.1	<5 .	13 4.1	0 0.0	0 0.0	50 2.6	
Cleft palate alone	55 4.0	5 3.8	23 7.3	<5 .	<5 .	92 4.7	
Cloacal exstrophy	21 1.5	<5 .	<5 .	<5 .	0 0.0	30 1.5	
Clubfoot	109 7.9	8 6.0	29 9.2	<5 .	0 0.0	164 8.5	
Coarctation of the aorta	12 0.9	0 0.0	<5 .	0 0.0	0 0.0	20 1.0	
Common truncus (truncus arteriosus)	<5 .	0 0.0	0 0.0	0 0.0	0 0.0	<5 .	
Congenital cataract	<5 .	0 0.0	<5 .	0 0.0	0 0.0	<5 .	
Congenital posterior urethral valves	<5 .	0 0.0	<5 .	0 0.0	0 0.0	5 0.3	
Craniosynostosis	<5 .	0 0.0	0 0.0	0 0.0	0 0.0	<5 .	
Diaphragmatic hernia	21 1.5	<5 .	13 4.1	<5 .	0 0.0	41 2.1	
Double outlet right ventricle	<5 .	<5 .	<5 .	0 0.0	0 0.0	10 0.5	
Ebstein anomaly	<5 .	0 0.0	<5 .	0 0.0	0 0.0	<5 .	
Encephalocele	<5 .	0 0.0	<5 .	0 0.0	0 0.0	6 0.3	
Esophageal atresia/tracheoesophageal fistula	11 0.8	<5 .	<5 .	0 0.0	0 0.0	18 0.9	
Gastroschisis	71 5.1	<5 .	14 4.4	0 0.0	0 0.0	98 5.1	
Holoprosencephaly	35 2.5	<5 .	13 4.1	<5 .	0 0.0	58 3.0	
Hypoplastic left heart syndrome	10 0.7	<5 .	<5 .	<5 .	0 0.0	21 1.1	
Hypospadias*	170 24.0	22 32.7	24 14.9	5 16.9	<5 .	237 23.9	
Interrupted aortic arch	0 0.0	<5 .	<5 .	0 0.0	0 0.0	<5 .	
Limb deficiencies (reduction defects)	36 2.6	8 6.0	16 5.1	<5 .	0 0.0	67 3.5	

Kansas**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	22 <i>1.6</i>	<5 .	13 <i>4.1</i>	<5 .	0 <i>0.0</i>	48 <i>2.5</i>	
Pulmonary valve atresia and stenosis	29 <i>2.1</i>	6 <i>4.5</i>	10 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	51 <i>2.6</i>	
Rectal and large intestinal atresia/stenosis	13 <i>0.9</i>	<5 .	14 <i>4.4</i>	<5 .	0 <i>0.0</i>	34 <i>1.8</i>	
Renal agenesis/hypoplasia	16 <i>1.2</i>	<5 .	6 <i>1.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>1.4</i>	
Single ventricle	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	
Small intestinal atresia/stenosis	23 <i>1.7</i>	0 <i>0.0</i>	5 <i>1.6</i>	<5 .	0 <i>0.0</i>	32 <i>1.6</i>	
Spina bifida without anencephalus	35 <i>2.5</i>	<5 .	15 <i>4.8</i>	<5 .	0 <i>0.0</i>	61 <i>3.1</i>	
Tetralogy of Fallot	13 <i>0.9</i>	0 <i>0.0</i>	5 <i>1.6</i>	<5 .	0 <i>0.0</i>	23 <i>1.2</i>	
Total anomalous pulmonary venous connection	<5 .	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Transposition of the great arteries (TGA)	12 <i>0.9</i>	<5 .	<5 .	<5 .	0 <i>0.0</i>	18 <i>0.9</i>	
Tricuspid valve atresia and stenosis	<5 .	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Trisomy 13	8 <i>0.6</i>	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>0.8</i>	
Trisomy 18	18 <i>1.3</i>	0 <i>0.0</i>	11 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	30 <i>1.5</i>	
Trisomy 21 (Down syndrome)	125 <i>9.0</i>	11 <i>8.3</i>	49 <i>15.6</i>	10 <i>17.5</i>	<5 .	217 <i>11.2</i>	
Turner syndrome†	6 <i>0.9</i>	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.7</i>	
Ventricular septal defect	153 <i>11.1</i>	12 <i>9.0</i>	84 <i>26.7</i>	9 <i>15.7</i>	<5 .	303 <i>15.6</i>	
Total live births	138235	13271	31504	5727	962	193977	
Male live births	70753	6721	16072	2966	453	99151	
Female live births	67482	6550	15432	2761	509	94826	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

Kansas**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	94 <i>5.4</i>	<5 <i>.</i>	98 <i>5.1</i>	
Trisomy 13	9 <i>0.5</i>	6 <i>2.9</i>	15 <i>0.8</i>	
Trisomy 18	17 <i>1.0</i>	13 <i>6.2</i>	30 <i>1.5</i>	
Trisomy 21 (Down syndrome)	121 <i>7.0</i>	95 <i>45.5</i>	217 <i>11.2</i>	
Total live births	173096	20872	193977	

**Total includes unknown maternal age

Notes

1.Data for this condition had a high number of unknown race/ethnicity cases.

General comments

-Data for conditions include live births and fetal deaths/stillbirths.

-Includes probable cases.

-Stillbirth means any complete expulsion or extraction from its mother of a human child the gestational age of which is not less than 20 completed weeks.

Kentucky
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	24 <i>1.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>0.9</i>	
Anophthalmia/microphthalmia	15 <i>0.6</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.6</i>	
Anotia/microtia	9 <i>0.4</i>	1 <i>0.4</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	14 <i>0.5</i>	
Aortic valve stenosis	32 <i>1.4</i>	3 <i>1.2</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	40 <i>1.4</i>	
Atrial septal defect	4730 <i>204.5</i>	903 <i>372.5</i>	194 <i>140.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	6092 <i>217.6</i>	
Atrioventricular septal defect (Endocardial cushion defect)	64 <i>2.8</i>	12 <i>5.0</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	83 <i>3.0</i>	
Biliary atresia	5 <i>0.2</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.3</i>	
Bladder exstrophy	6 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.2</i>	
Choanal atresia	22 <i>1.0</i>	2 <i>0.8</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>0.9</i>	
Cleft lip alone	89 <i>3.8</i>	7 <i>2.9</i>	3 <i>2.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	103 <i>3.7</i>	
Cleft lip with cleft palate	134 <i>5.8</i>	8 <i>3.3</i>	5 <i>3.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	151 <i>5.4</i>	
Cleft palate alone	132 <i>5.7</i>	9 <i>3.7</i>	6 <i>4.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	154 <i>5.5</i>	
Cloacal exstrophy	78 <i>3.4</i>	16 <i>6.6</i>	3 <i>2.2</i>	1 <i>3.5</i>	0 <i>0.0</i>	103 <i>3.7</i>	
Clubfoot	351 <i>15.2</i>	27 <i>11.1</i>	13 <i>9.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	404 <i>14.4</i>	
Coarctation of the aorta	148 <i>6.4</i>	14 <i>5.8</i>	7 <i>5.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	173 <i>6.2</i>	
Common truncus (truncus arteriosus)	14 <i>0.6</i>	4 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>0.6</i>	
Congenital cataract	16 <i>0.7</i>	2 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>0.7</i>	
Congenital posterior urethral valves	22 <i>1.0</i>	6 <i>2.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	30 <i>1.1</i>	
Deletion 22q11.2	2 <i>0.1</i>	1 <i>0.4</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.1</i>	
Diaphragmatic hernia	60 <i>2.6</i>	10 <i>4.1</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	76 <i>2.7</i>	
Double outlet right ventricle	58 <i>2.5</i>	10 <i>4.1</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	73 <i>2.6</i>	
Ebstein anomaly	11 <i>0.5</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.5</i>	
Encephalocele	17 <i>0.7</i>	5 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.8</i>	
Esophageal atresia/tracheoesophageal fistula	47 <i>2.0</i>	1 <i>0.4</i>	3 <i>2.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	52 <i>1.9</i>	
Gastroschisis	86 <i>3.7</i>	9 <i>3.7</i>	4 <i>2.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	104 <i>3.7</i>	
Holoprosencephaly	91 <i>3.9</i>	9 <i>3.7</i>	5 <i>3.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	109 <i>3.9</i>	
Hypoplastic left heart syndrome	62 <i>2.7</i>	9 <i>3.7</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	75 <i>2.7</i>	
Hypospadias*	960 <i>80.6</i>	85 <i>68.9</i>	19 <i>26.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	1091 <i>75.8</i>	
Interrupted aortic arch	6 <i>0.3</i>	2 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	10 <i>0.4</i>	
Limb deficiencies (reduction defects)	69 <i>3.0</i>	4 <i>1.7</i>	3 <i>2.2</i>	2 <i>7.0</i>	0 <i>0.0</i>	80 <i>2.9</i>	

Kentucky
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	31 <i>1.3</i>	2 <i>0.8</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	34 <i>1.2</i>	
Pulmonary valve atresia and stenosis	171 <i>7.4</i>	17 <i>7.0</i>	6 <i>4.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	206 <i>7.4</i>	
Pulmonary valve atresia	19 <i>0.8</i>	2 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>0.9</i>	
Rectal and large intestinal atresia/stenosis	140 <i>6.1</i>	17 <i>7.0</i>	5 <i>3.6</i>	2 <i>7.0</i>	0 <i>0.0</i>	175 <i>6.3</i>	
Renal agenesis/hypoplasia	111 <i>4.8</i>	11 <i>4.5</i>	4 <i>2.9</i>	1 <i>3.5</i>	0 <i>0.0</i>	136 <i>4.9</i>	
Single ventricle	7 <i>0.3</i>	1 <i>0.4</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.5</i>	
Small intestinal atresia/stenosis	66 <i>2.9</i>	7 <i>2.9</i>	3 <i>2.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	81 <i>2.9</i>	
Spina bifida without anencephalus	56 <i>2.4</i>	12 <i>5.0</i>	3 <i>2.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	76 <i>2.7</i>	
Tetralogy of Fallot	87 <i>3.8</i>	11 <i>4.5</i>	4 <i>2.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	109 <i>3.9</i>	
Total anomalous pulmonary venous connection	16 <i>0.7</i>	2 <i>0.8</i>	2 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>0.8</i>	
Transposition of the great arteries (TGA)	58 <i>2.5</i>	5 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	63 <i>2.3</i>	
Dextro-transposition of great arteries (d-TGA)	48 <i>2.1</i>	4 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	52 <i>1.9</i>	
Tricuspid valve atresia and stenosis	22 <i>1.0</i>	2 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>0.9</i>	
Trisomy 13	24 <i>1.0</i>	3 <i>1.2</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>1.0</i>	
Trisomy 18	35 <i>1.5</i>	3 <i>1.2</i>	1 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	41 <i>1.5</i>	
Trisomy 21 (Down syndrome)	241 <i>10.4</i>	26 <i>10.7</i>	17 <i>12.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	302 <i>10.8</i>	
Turner syndrome†	22 <i>2.0</i>	1 <i>0.8</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>1.8</i>	
Ventricular septal defect	1098 <i>47.5</i>	141 <i>58.2</i>	57 <i>41.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	1365 <i>48.8</i>	1
Total live births §	231339	24240	13805	2860	288	279959	
Male live births	119108	12328	7089	1456	138	143993	
Female live births	112211	11910	6715	1404	150	135943	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Kentucky**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	101 <i>4.0</i>	3 <i>1.1</i>	104 <i>3.7</i>	
Trisomy 13	23 <i>0.9</i>	5 <i>1.8</i>	28 <i>1.0</i>	
Trisomy 18	24 <i>1.0</i>	17 <i>6.2</i>	41 <i>1.5</i>	
Trisomy 21 (Down syndrome)	217 <i>8.7</i>	78 <i>28.2</i>	302 <i>10.8</i>	
Total live births	250257	27633	279959	

**Total includes unknown maternal age

Notes

1.Data for this condition exclude inlet ventricular septal defect and common atrioventricular canal type ventricular septal defect.

General comments

-Fetal death defined as 20 weeks or more gestation or 350 grams or greater.

Louisiana**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	11 <i>1.1</i>	<5 .	<5 .	<5 .	0 <i>0.0</i>	17 <i>0.9</i>	
Anophthalmia/microphthalmia	8 <i>0.8</i>	5 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.7</i>	
Anotia/microtia	0 <i>0.0</i>	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	
Aortic valve stenosis	11 <i>1.1</i>	7 <i>1.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>1.0</i>	
Atrial septal defect	336 <i>33.9</i>	252 <i>35.6</i>	40 <i>35.5</i>	8 <i>25.0</i>	<5 .	642 <i>34.4</i>	
Atrioventricular septal defect (Endocardial cushion defect)	38 <i>3.8</i>	27 <i>3.8</i>	<5 .	<5 .	0 <i>0.0</i>	69 <i>3.7</i>	
Biliary atresia	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Bladder exstrophy	5 <i>0.5</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Choanal atresia	14 <i>1.4</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.9</i>	
Cleft lip alone	34 <i>3.4</i>	12 <i>1.7</i>	<5 .	<5 .	0 <i>0.0</i>	49 <i>2.6</i>	
Cleft lip with cleft palate	40 <i>4.0</i>	27 <i>3.8</i>	7 <i>6.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	74 <i>4.0</i>	
Cleft palate alone	58 <i>5.9</i>	26 <i>3.7</i>	5 <i>4.4</i>	<5 .	0 <i>0.0</i>	90 <i>4.8</i>	
Clubfoot	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	. .	<5 .	
Coarctation of the aorta	42 <i>4.2</i>	22 <i>3.1</i>	<5 .	<5 .	0 <i>0.0</i>	67 <i>3.6</i>	
Common truncus (truncus arteriosus)	5 <i>0.5</i>	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.4</i>	
Congenital cataract	5 <i>0.5</i>	10 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>0.8</i>	
Congenital posterior urethral valves	20 <i>2.0</i>	17 <i>2.4</i>	<5 .	<5 .	0 <i>0.0</i>	40 <i>2.1</i>	
Deletion 22q11.2	<5 .	<5 .	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	<5 .	
Diaphragmatic hernia	13 <i>1.3</i>	10 <i>1.4</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>1.3</i>	
Double outlet right ventricle	12 <i>1.2</i>	7 <i>1.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>1.2</i>	
Ebstein anomaly	5 <i>0.5</i>	<5 .	<5 .	<5 .	0 <i>0.0</i>	8 <i>0.4</i>	
Encephalocele	8 <i>0.8</i>	8 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	17 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	11 <i>1.1</i>	8 <i>1.1</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>1.1</i>	
Gastroschisis	12 <i>1.2</i>	6 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>1.0</i>	
Holoprosencephaly	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	
Hypoplastic left heart syndrome	6 <i>0.6</i>	15 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>1.1</i>	
Hypospadias*	421 <i>83.1</i>	182 <i>50.5</i>	21 <i>36.8</i>	8 <i>48.3</i>	5 <i>82.6</i>	641 <i>67.2</i>	
Interrupted aortic arch	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	
Limb deficiencies (reduction defects)	23 <i>2.3</i>	23 <i>3.2</i>	<5 .	0 <i>0.0</i>	<5 .	50 <i>2.7</i>	
Omphalocele	9 <i>0.9</i>	16 <i>2.3</i>	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	26 <i>1.4</i>	

Louisiana**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Pulmonary valve atresia and stenosis	38 <i>3.8</i>	32 <i>4.5</i>	<5 .	0 <i>0.0</i>	<5 .	74 <i>4.0</i>	
Pulmonary valve atresia	8 <i>0.8</i>	5 <i>0.7</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	14 <i>0.8</i>	
Rectal and large intestinal atresia/stenosis	33 <i>3.3</i>	22 <i>3.1</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	58 <i>3.1</i>	
Renal agenesis/hypoplasia	40 <i>4.0</i>	15 <i>2.1</i>	<5 .	0 <i>0.0</i>	<5 .	60 <i>3.2</i>	
Single ventricle	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Spina bifida without anencephalus	29 <i>2.9</i>	13 <i>1.8</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	43 <i>2.3</i>	
Tetralogy of Fallot	24 <i>2.4</i>	27 <i>3.8</i>	<5 .	<5 .	0 <i>0.0</i>	54 <i>2.9</i>	
Total anomalous pulmonary venous connection	0 <i>0.0</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	<5 .	
Transposition of the great arteries (TGA)	27 <i>2.7</i>	6 <i>0.8</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	36 <i>1.9</i>	
Dextro-transposition of great arteries (d-TGA)	18 <i>1.8</i>	5 <i>0.7</i>	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>1.3</i>	
Tricuspid valve atresia and stenosis	9 <i>0.9</i>	5 <i>0.7</i>	<5 .	0 <i>0.0</i>	<5 .	17 <i>0.9</i>	
Tricuspid valve atresia	5 <i>0.5</i>	5 <i>0.7</i>	<5 .	0 <i>0.0</i>	<5 .	12 <i>0.6</i>	
Trisomy 13	6 <i>0.6</i>	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	10 <i>0.5</i>	
Trisomy 18	21 <i>2.1</i>	8 <i>1.1</i>	<5 .	<5 .	0 <i>0.0</i>	31 <i>1.7</i>	
Trisomy 21 (Down syndrome)	101 <i>10.2</i>	57 <i>8.1</i>	14 <i>12.4</i>	5 <i>15.6</i>	0 <i>0.0</i>	177 <i>9.5</i>	
Turner syndrome†	6 <i>1.2</i>	<5 .	<5 .	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>1.0</i>	
Ventricular septal defect	375 <i>37.9</i>	239 <i>33.8</i>	53 <i>47.1</i>	9 <i>28.1</i>	7 <i>60.9</i>	686 <i>36.8</i>	
Total live births §	98988	70803	11257	3200	1150	186646	
Male live births	50647	36067	5708	1657	605	95318	
Female live births	48338	34736	5548	1543	545	91324	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Louisiana**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	94 <i>5.4</i>	<5 <i>.</i>	98 <i>5.1</i>	
Trisomy 13	9 <i>0.5</i>	6 <i>2.9</i>	15 <i>0.8</i>	
Trisomy 18	17 <i>1.0</i>	13 <i>6.2</i>	30 <i>1.5</i>	
Trisomy 21 (Down syndrome)	121 <i>7.0</i>	95 <i>45.5</i>	217 <i>11.2</i>	
Total live births	173096	20872	193977	

**Total includes unknown maternal age

General comments

- 2009 birth defects data are provisional and include live births to Louisiana residents that occurred in 50/54 birth hospitals and covered 92 % of total births.
- 2010 birth defects data are provisional and include only live births to Louisiana residents that occurred in 45/56 birth hospitals and covered 76 % of total births.
- 2011 birth defects data are provisional and include only live births to Louisiana residents that occurred in 41/55 birth hospitals and covered 68 % of total births.
- 2012 birth defects data are provisional and include only live births to Louisiana residents that occurred in 28/51 birth hospitals and covered 36 % of total births.
- 2013 birth defects data are provisional and include only live births to Louisiana residents that occurred in 17/52 birth hospitals and covered 18 % of total births.
- All probable cases are included.
- Only live births with birth weight \geq 350 grams or a gestational age \geq 20 weeks are included in surveillance.

Maine**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	10 <i>1.7</i>	2 <i>10.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>2.5</i>	1
Anotia/microtia	3 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.6</i>	
Aortic valve stenosis	1 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.8</i>	2
Atrial septal defect	38 <i>32.3</i>	0 <i>0.0</i>	2 <i>116.3</i>	1 <i>41.0</i>	1 <i>86.2</i>	43 <i>33.7</i>	2
Atrioventricular septal defect (Endocardial cushion defect)	3 <i>2.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>2.3</i>	2
Choanal atresia	5 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>1.3</i>	3
Cleft lip alone	20 <i>3.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	20 <i>3.1</i>	
Cleft lip with cleft palate	27 <i>4.5</i>	1 <i>5.0</i>	0 <i>0.0</i>	1 <i>8.8</i>	0 <i>0.0</i>	31 <i>4.8</i>	
Cleft palate alone	36 <i>6.0</i>	1 <i>5.0</i>	0 <i>0.0</i>	1 <i>8.8</i>	1 <i>17.0</i>	41 <i>6.3</i>	
Coarctation of the aorta	31 <i>5.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	32 <i>4.9</i>	
Common truncus (truncus arteriosus)	3 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.5</i>	
Congenital posterior urethral valves	36 <i>30.6</i>	1 <i>22.6</i>	0 <i>0.0</i>	2 <i>82.0</i>	0 <i>0.0</i>	40 <i>31.3</i>	2
Diaphragmatic hernia	1 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.8</i>	2
Double outlet right ventricle	4 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>1.0</i>	4
Ebstein anomaly	1 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.8</i>	2
Encephalocele	5 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>8.8</i>	0 <i>0.0</i>	6 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	5 <i>4.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>3.9</i>	2
Gastroschisis	38 <i>6.4</i>	0 <i>0.0</i>	1 <i>10.0</i>	1 <i>8.8</i>	0 <i>0.0</i>	41 <i>6.3</i>	
Hypoplastic left heart syndrome	20 <i>3.3</i>	2 <i>10.0</i>	1 <i>10.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>4.2</i>	
Hypospadias*	202 <i>65.7</i>	7 <i>64.6</i>	3 <i>58.1</i>	4 <i>67.7</i>	3 <i>99.7</i>	226 <i>67.8</i>	
Interrupted aortic arch	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.3</i>	4
Limb deficiencies (reduction defects)	16 <i>2.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>17.0</i>	20 <i>3.1</i>	
Omphalocele	11 <i>1.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>1.7</i>	
Pulmonary valve atresia and stenosis	25 <i>4.2</i>	1 <i>5.0</i>	0 <i>0.0</i>	1 <i>8.8</i>	0 <i>0.0</i>	27 <i>4.2</i>	5
Pulmonary valve atresia	4 <i>0.7</i>	1 <i>5.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.8</i>	
Rectal and large intestinal atresia/stenosis	8 <i>6.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>6.3</i>	2
Renal agenesis/hypoplasia	8 <i>6.8</i>	1 <i>22.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>7.0</i>	2
Single ventricle	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.3</i>	4
Spina bifida without anencephalus	18 <i>3.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>3.2</i>	
Tetralogy of Fallot	27 <i>4.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>4.3</i>	

Maine**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Maternal Race/Ethnicity							Notes
Defect	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic	Total**	
Transposition of the great arteries (TGA)	19 <i>3.2</i>	1 <i>5.0</i>	0 <i>0.0</i>	1 <i>8.8</i>	0 <i>0.0</i>	22 <i>3.4</i>	
Tricuspid valve atresia	5 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.8</i>	
Trisomy 13	2 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>1.6</i>	2
Trisomy 18	2 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>1.6</i>	2
Trisomy 21 (Down syndrome)	68 <i>11.4</i>	1 <i>5.0</i>	4 <i>40.2</i>	1 <i>8.8</i>	0 <i>0.0</i>	79 <i>12.2</i>	
Ventricular septal defect	29 <i>24.6</i>	0 <i>0.0</i>	1 <i>58.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	32 <i>25.0</i>	2
Total live births	59833	2007	996	1132	587	64718	
Male live births	30755	1084	516	591	301	33331	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Maine**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	41 <i>7.3</i>	0 <i>0.0</i>	41 <i>6.3</i>	
Trisomy 13	2 <i>1.8</i>	0 <i>0.0</i>	2 <i>1.6</i>	2
Trisomy 18	2 <i>1.8</i>	0 <i>0.0</i>	2 <i>1.6</i>	2
Trisomy 21 (Down syndrome)	51 <i>9.1</i>	27 <i>30.7</i>	79 <i>12.2</i>	
Total live births	55926	8792	64718	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include probable cases.
- 2.Data for this condition begin in 2013.
- 3.Data for this condition begin in 2011.
- 4.Data for this condition end in 2011.
- 5.Data for this condition include atresia only through 2010; data including stenosis begin in 2011.

General comments

- Fetal deaths are defined as deaths that occur at any gestational age.
- Termination data not available

Maryland
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	37 2.2	9 0.7	7 1.3	0 0.0	0 0.0	57 1.6	
Anophthalmia/microphthalmia	1 0.1	2 0.2	1 0.2	0 0.0	0 0.0	4 0.1	
Anotia/microtia	5 0.3	2 0.2	6 1.2	1 0.4	0 0.0	15 0.4	
Aortic valve stenosis	2 0.1	0 0.0	0 0.0	0 0.0	0 0.0	3 0.1	
Atrial septal defect	9 0.5	8 0.7	2 0.4	0 0.0	0 0.0	19 0.5	
Atrioventricular septal defect (Endocardial cushion defect)	6 0.4	7 0.6	1 0.2	0 0.0	0 0.0	15 0.4	
Biliary atresia	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	
Bladder exstrophy	3 0.2	2 0.2	1 0.2	0 0.0	0 0.0	6 0.2	
Choanal atresia	5 0.3	2 0.2	1 0.2	0 0.0	0 0.0	9 0.2	
Cleft lip alone	61 3.7	15 1.2	2 0.4	5 1.9	0 0.0	93 2.5	
Cleft lip with cleft palate	84 5.0	26 2.2	19 3.7	6 2.3	0 0.0	139 3.8	
Cleft palate alone	82 4.9	26 2.2	12 2.3	6 2.3	0 0.0	143 3.9	
Cloacal exstrophy	2 0.1	0 0.0	0 0.0	0 0.0	0 0.0	2 0.1	
Clubfoot	96 5.8	48 4.0	17 3.3	5 1.9	1 12.8	178 4.9	
Coarctation of the aorta	10 0.6	3 0.2	2 0.4	1 0.4	0 0.0	20 0.5	
Common truncus (truncus arteriosus)	3 0.2	1 0.1	0 0.0	1 0.4	0 0.0	5 0.1	
Congenital cataract	1 0.1	1 0.1	0 0.0	0 0.0	0 0.0	3 0.1	
Congenital posterior urethral valves	5 0.3	3 0.2	0 0.0	1 0.4	0 0.0	9 0.2	
Craniosynostosis	5 0.3	3 0.2	1 0.2	0 0.0	0 0.0	9 0.2	
Deletion 22q11.2	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	
Diaphragmatic hernia	9 0.5	9 0.7	2 0.4	0 0.0	0 0.0	20 0.5	
Double outlet right ventricle	10 0.6	1 0.1	0 0.0	0 0.0	0 0.0	12 0.3	
Ebstein anomaly	4 0.2	1 0.1	1 0.2	0 0.0	0 0.0	7 0.2	
Encephalocele	7 0.4	7 0.6	1 0.2	1 0.4	0 0.0	16 0.4	
Esophageal atresia/tracheoesophageal fistula	23 1.4	12 1.0	5 1.0	2 0.8	0 0.0	48 1.3	
Gastroschisis	12 0.7	6 0.5	1 0.2	1 0.4	0 0.0	24 0.7	
Holoprosencephaly	12 0.7	10 0.8	5 1.0	0 0.0	0 0.0	27 0.7	
Hypoplastic left heart syndrome	13 0.8	4 0.3	0 0.0	3 1.1	0 0.0	24 0.7	
Hypospadias*	352 41.3	248 40.6	49 18.5	34 25.0	0 0.0	768 41.0	
Interrupted aortic arch	1 0.1	0 0.0	0 0.0	0 0.0	0 0.0	1 0.0	

Maryland**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	38 <i>2.3</i>	48 <i>4.0</i>	15 <i>2.9</i>	3 <i>1.1</i>	0 <i>0.0</i>	114 <i>3.1</i>	
Omphalocele	2 <i>0.1</i>	5 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>0.3</i>	
Pulmonary valve atresia and stenosis	3 <i>0.2</i>	4 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>0.4</i>	
Pulmonary valve atresia	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Rectal and large intestinal atresia/stenosis	21 <i>1.3</i>	19 <i>1.6</i>	5 <i>1.0</i>	4 <i>1.5</i>	0 <i>0.0</i>	56 <i>1.5</i>	
Renal agenesis/hypoplasia	20 <i>1.2</i>	20 <i>1.7</i>	2 <i>0.4</i>	3 <i>1.1</i>	0 <i>0.0</i>	51 <i>1.4</i>	
Single ventricle	5 <i>0.3</i>	7 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	20 <i>0.5</i>	
Small intestinal atresia/stenosis	12 <i>0.7</i>	10 <i>0.8</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>0.7</i>	
Spina bifida without anencephalus	55 <i>3.3</i>	17 <i>1.4</i>	8 <i>1.5</i>	2 <i>0.8</i>	0 <i>0.0</i>	85 <i>2.3</i>	
Tetralogy of Fallot	28 <i>1.7</i>	9 <i>0.7</i>	2 <i>0.4</i>	5 <i>1.9</i>	0 <i>0.0</i>	50 <i>1.4</i>	
Total anomalous pulmonary venous connection	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.1</i>	
Transposition of the great arteries (TGA)	11 <i>0.7</i>	5 <i>0.4</i>	1 <i>0.2</i>	3 <i>1.1</i>	0 <i>0.0</i>	22 <i>0.6</i>	
Dextro-transposition of great arteries (d-TGA)	10 <i>0.6</i>	2 <i>0.2</i>	1 <i>0.2</i>	3 <i>1.1</i>	0 <i>0.0</i>	16 <i>0.4</i>	
Tricuspid valve atresia and stenosis	2 <i>0.1</i>	2 <i>0.2</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.2</i>	
Tricuspid valve atresia	1 <i>0.1</i>	0 <i>0.0</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.1</i>	
Trisomy 13	14 <i>0.8</i>	4 <i>0.3</i>	1 <i>0.2</i>	1 <i>0.4</i>	0 <i>0.0</i>	20 <i>0.5</i>	
Trisomy 18	25 <i>1.5</i>	9 <i>0.7</i>	9 <i>1.7</i>	2 <i>0.8</i>	0 <i>0.0</i>	49 <i>1.3</i>	
Trisomy 21 (Down syndrome)	164 <i>9.8</i>	97 <i>8.1</i>	47 <i>9.0</i>	18 <i>6.9</i>	0 <i>0.0</i>	373 <i>10.2</i>	
Turner syndrome†	5 <i>0.6</i>	3 <i>0.5</i>	2 <i>0.8</i>	1 <i>0.8</i>	0 <i>0.0</i>	12 <i>0.7</i>	
Ventricular septal defect	26 <i>1.6</i>	28 <i>2.3</i>	3 <i>0.6</i>	3 <i>1.1</i>	0 <i>0.0</i>	72 <i>2.0</i>	1
Total live births	166571	120483	51948	26252	779	366789	
Male live births	85188	61119	26471	13598	388	187175	
Female live births	81383	59364	25477	12654	391	179614	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Maryland**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	15 <i>0.5</i>	3 <i>0.4</i>	24 <i>0.7</i>	
Trisomy 13	7 <i>0.2</i>	13 <i>1.9</i>	20 <i>0.5</i>	
Trisomy 18	26 <i>0.9</i>	22 <i>3.3</i>	49 <i>1.3</i>	
Trisomy 21 (Down syndrome)	169 <i>5.6</i>	186 <i>27.5</i>	373 <i>10.2</i>	
Total live births	299139	67650	366789	

**Total includes unknown maternal age

Notes

1.Data for this condition include probable cases.

General comments

-Fetal deaths defined as gestational age greater than 20 weeks.

-Terminations defined as gestational age less than or equal to 20 weeks.

Massachusetts
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	31 <i>1.3</i>	4 <i>1.2</i>	12 <i>2.0</i>	3 <i>1.0</i>	0 <i>0.0</i>	59 <i>1.6</i>	
Anophthalmia/microphthalmia	28 <i>1.2</i>	4 <i>1.2</i>	13 <i>2.2</i>	3 <i>1.0</i>	0 <i>0.0</i>	48 <i>1.3</i>	
Anotia/microtia	42 <i>1.8</i>	4 <i>1.2</i>	18 <i>3.0</i>	9 <i>2.9</i>	0 <i>0.0</i>	75 <i>2.1</i>	
Aortic valve stenosis	36 <i>1.5</i>	3 <i>0.9</i>	5 <i>0.8</i>	2 <i>0.7</i>	0 <i>0.0</i>	46 <i>1.3</i>	
Atrial septal defect	524 <i>22.4</i>	99 <i>28.6</i>	129 <i>21.6</i>	64 <i>21.0</i>	1 <i>9.6</i>	827 <i>22.6</i>	
Atrioventricular septal defect (Endocardial cushion defect)	133 <i>5.7</i>	29 <i>8.4</i>	45 <i>7.5</i>	13 <i>4.3</i>	0 <i>0.0</i>	226 <i>6.2</i>	
Biliary atresia	8 <i>0.3</i>	2 <i>0.6</i>	6 <i>1.0</i>	4 <i>1.3</i>	0 <i>0.0</i>	20 <i>0.5</i>	
Bladder exstrophy	8 <i>0.3</i>	0 <i>0.0</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>0.2</i>	
Choanal atresia	20 <i>0.9</i>	0 <i>0.0</i>	5 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	26 <i>0.7</i>	
Cleft lip alone	88 <i>3.8</i>	9 <i>2.6</i>	13 <i>2.2</i>	15 <i>4.9</i>	0 <i>0.0</i>	127 <i>3.5</i>	
Cleft lip with cleft palate	125 <i>5.3</i>	8 <i>2.3</i>	35 <i>5.9</i>	12 <i>3.9</i>	0 <i>0.0</i>	185 <i>5.1</i>	
Cleft palate alone	134 <i>5.7</i>	19 <i>5.5</i>	31 <i>5.2</i>	16 <i>5.2</i>	0 <i>0.0</i>	203 <i>5.6</i>	1
Cloacal exstrophy	8 <i>0.3</i>	1 <i>0.3</i>	3 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.3</i>	
Clubfoot	348 <i>14.9</i>	45 <i>13.0</i>	77 <i>12.9</i>	29 <i>9.5</i>	3 <i>28.8</i>	521 <i>14.3</i>	2
Coarctation of the aorta	112 <i>4.8</i>	19 <i>5.5</i>	28 <i>4.7</i>	6 <i>2.0</i>	0 <i>0.0</i>	166 <i>4.5</i>	
Common truncus (truncus arteriosus)	8 <i>0.3</i>	1 <i>0.3</i>	2 <i>0.3</i>	1 <i>0.3</i>	1 <i>9.6</i>	14 <i>0.4</i>	
Congenital cataract	55 <i>2.4</i>	8 <i>2.3</i>	24 <i>4.0</i>	2 <i>0.7</i>	0 <i>0.0</i>	89 <i>2.4</i>	
Congenital posterior urethral valves	14 <i>0.6</i>	10 <i>2.9</i>	9 <i>1.5</i>	7 <i>2.3</i>	0 <i>0.0</i>	44 <i>1.2</i>	
Craniosynostosis	145 <i>6.2</i>	7 <i>2.0</i>	26 <i>4.4</i>	7 <i>2.3</i>	1 <i>9.6</i>	189 <i>5.2</i>	
Deletion 22q11.2	29 <i>1.2</i>	5 <i>1.4</i>	11 <i>1.8</i>	7 <i>2.3</i>	0 <i>0.0</i>	53 <i>1.5</i>	
Diaphragmatic hernia	71 <i>3.0</i>	6 <i>1.7</i>	17 <i>2.8</i>	8 <i>2.6</i>	0 <i>0.0</i>	105 <i>2.9</i>	
Double outlet right ventricle	31 <i>1.3</i>	3 <i>0.9</i>	12 <i>2.0</i>	7 <i>2.3</i>	0 <i>0.0</i>	53 <i>1.5</i>	
Ebstein anomaly	9 <i>0.4</i>	1 <i>0.3</i>	5 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.4</i>	
Encephalocele	15 <i>0.6</i>	3 <i>0.9</i>	9 <i>1.5</i>	4 <i>1.3</i>	0 <i>0.0</i>	34 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	79 <i>3.4</i>	9 <i>2.6</i>	19 <i>3.2</i>	2 <i>0.7</i>	0 <i>0.0</i>	109 <i>3.0</i>	
Gastroschisis	69 <i>3.0</i>	15 <i>4.3</i>	29 <i>4.9</i>	7 <i>2.3</i>	0 <i>0.0</i>	125 <i>3.4</i>	
Holoprosencephaly	26 <i>1.1</i>	3 <i>0.9</i>	13 <i>2.2</i>	3 <i>1.0</i>	0 <i>0.0</i>	48 <i>1.3</i>	
Hypoplastic left heart syndrome	43 <i>1.8</i>	8 <i>2.3</i>	14 <i>2.3</i>	5 <i>1.6</i>	0 <i>0.0</i>	73 <i>2.0</i>	
Hypospadias*	338 <i>28.3</i>	50 <i>28.2</i>	43 <i>14.0</i>	26 <i>16.5</i>	1 <i>19.8</i>	468 <i>25.0</i>	3
Interrupted aortic arch	11 <i>0.5</i>	3 <i>0.9</i>	2 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.4</i>	

Massachusetts
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	113 <i>4.8</i>	19 <i>5.5</i>	26 <i>4.4</i>	9 <i>2.9</i>	0 <i>0.0</i>	172 <i>4.7</i>	
Omphalocele	66 <i>2.8</i>	7 <i>2.0</i>	23 <i>3.8</i>	2 <i>0.7</i>	0 <i>0.0</i>	101 <i>2.8</i>	
Pulmonary valve atresia and stenosis	191 <i>8.2</i>	50 <i>14.4</i>	45 <i>7.5</i>	19 <i>6.2</i>	1 <i>9.6</i>	311 <i>8.5</i>	
Pulmonary valve atresia	13 <i>0.6</i>	3 <i>0.9</i>	4 <i>0.7</i>	2 <i>0.7</i>	0 <i>0.0</i>	22 <i>0.6</i>	
Rectal and large intestinal atresia/stenosis	92 <i>3.9</i>	13 <i>3.8</i>	25 <i>4.2</i>	12 <i>3.9</i>	0 <i>0.0</i>	148 <i>4.1</i>	
Renal agenesis/hypoplasia	13 <i>0.6</i>	2 <i>0.6</i>	3 <i>0.5</i>	1 <i>0.3</i>	0 <i>0.0</i>	23 <i>0.6</i>	4
Single ventricle	10 <i>0.4</i>	2 <i>0.6</i>	0 <i>0.0</i>	3 <i>1.0</i>	0 <i>0.0</i>	15 <i>0.4</i>	
Small intestinal atresia/stenosis	65 <i>2.8</i>	10 <i>2.9</i>	22 <i>3.7</i>	7 <i>2.3</i>	0 <i>0.0</i>	106 <i>2.9</i>	
Spina bifida without anencephalus	80 <i>3.4</i>	7 <i>2.0</i>	23 <i>3.8</i>	5 <i>1.6</i>	0 <i>0.0</i>	122 <i>3.3</i>	
Tetralogy of Fallot	109 <i>4.7</i>	15 <i>4.3</i>	27 <i>4.5</i>	14 <i>4.6</i>	1 <i>9.6</i>	171 <i>4.7</i>	5
Total anomalous pulmonary venous connection	13 <i>0.6</i>	3 <i>0.9</i>	8 <i>1.3</i>	10 <i>3.3</i>	0 <i>0.0</i>	34 <i>0.9</i>	
Transposition of the great arteries (TGA)	66 <i>2.8</i>	11 <i>3.2</i>	18 <i>3.0</i>	9 <i>2.9</i>	0 <i>0.0</i>	107 <i>2.9</i>	
Dextro-transposition of great arteries (d-TGA)	54 <i>2.3</i>	10 <i>2.9</i>	17 <i>2.8</i>	9 <i>2.9</i>	0 <i>0.0</i>	93 <i>2.5</i>	
Tricuspid valve atresia and stenosis	13 <i>0.6</i>	3 <i>0.9</i>	5 <i>0.8</i>	1 <i>0.3</i>	0 <i>0.0</i>	22 <i>0.6</i>	
Tricuspid valve atresia	8 <i>0.3</i>	1 <i>0.3</i>	4 <i>0.7</i>	1 <i>0.3</i>	0 <i>0.0</i>	14 <i>0.4</i>	
Trisomy 13	46 <i>2.0</i>	3 <i>0.9</i>	8 <i>1.3</i>	5 <i>1.6</i>	0 <i>0.0</i>	69 <i>1.9</i>	
Trisomy 18	94 <i>4.0</i>	16 <i>4.6</i>	30 <i>5.0</i>	14 <i>4.6</i>	0 <i>0.0</i>	171 <i>4.7</i>	
Trisomy 21 (Down syndrome)	450 <i>19.2</i>	65 <i>18.8</i>	115 <i>19.2</i>	50 <i>16.4</i>	0 <i>0.0</i>	721 <i>19.7</i>	
Turner syndrome†	65 <i>5.7</i>	6 <i>3.6</i>	10 <i>3.4</i>	5 <i>3.4</i>	1 <i>18.7</i>	106 <i>5.9</i>	
Ventricular septal defect	517 <i>22.1</i>	80 <i>23.1</i>	139 <i>23.3</i>	70 <i>22.9</i>	1 <i>9.6</i>	815 <i>22.3</i>	6
Total live births §	233822	34653	59764	30541	1042	365243	
Male live births	119629	17758	30606	15771	506	187029	
Female live births	114190	16893	29156	14770	536	178206	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Massachusetts**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	118 <i>4.2</i>	6 <i>0.7</i>	125 <i>3.4</i>	
Trisomy 13	29 <i>1.0</i>	40 <i>4.9</i>	69 <i>1.9</i>	
Trisomy 18	59 <i>2.1</i>	108 <i>13.1</i>	171 <i>4.7</i>	
Trisomy 21 (Down syndrome)	300 <i>10.6</i>	419 <i>50.9</i>	721 <i>19.7</i>	
Total live births	282845	82382	365243	

**Total includes unknown maternal age

Notes

- 1.Data for this condition exclude isolated submucous cleft palate.
- 2.Data for this condition is limited to those who require casting or other treatment if the case is live birth.
- 3.Data for this condition exclude 1st degree and not otherwise specified.
- 4.Data for this condition exclude isolated unilateral renal agenesis/hypoplasia.
- 5.Data for this condition include pulmonary atresia with ventricular septal defect.
- 6.Data for this condition exclude isolated muscular ventricular septal defect.

General comments

- Coding system is modified CDC/BPA, but with different modified BPA codes for congenital cataract, diaphragmatic hernia, and double outlet right ventricle.
- Excludes probable and possible cases.
- For live births, race/ethnicity from vital records; new birth certificate in 2011--multiple categories allowed.
- For stillbirths without vital record info and for unspecified non-livebirths, race/ethnicity from medical record.
- Pregnancy outcomes include live births, stillbirths, and starting in 2011, unspecified non-live births.
- Stillbirths defined as fetal deaths \geq 20 weeks or \geq 350 grams.
- Unspecified non-live births include elective terminations and early losses $<$ 20 weeks or $<$ 350 grams.

Michigan
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	49 <i>1.2</i>	5 <i>0.5</i>	4 <i>1.0</i>	2 <i>1.1</i>	0 <i>0.0</i>	61 <i>1.1</i>	
Anophthalmia/microphthalmia	45 <i>1.1</i>	16 <i>1.5</i>	3 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	64 <i>1.1</i>	
Anotia/microtia	37 <i>0.9</i>	10 <i>0.9</i>	14 <i>3.5</i>	4 <i>2.1</i>	0 <i>0.0</i>	85 <i>1.5</i>	
Aortic valve stenosis	89 <i>2.3</i>	10 <i>0.9</i>	7 <i>1.7</i>	5 <i>2.6</i>	0 <i>0.0</i>	115 <i>2.0</i>	
Atrial septal defect	3290 <i>83.5</i>	1489 <i>141.1</i>	271 <i>67.6</i>	174 <i>91.5</i>	32 <i>137.2</i>	5332 <i>93.1</i>	
Atrioventricular septal defect (Endocardial cushion defect)	215 <i>5.5</i>	46 <i>4.4</i>	19 <i>4.7</i>	7 <i>3.7</i>	0 <i>0.0</i>	290 <i>5.1</i>	
Biliary atresia	39 <i>1.0</i>	21 <i>2.0</i>	9 <i>2.2</i>	1 <i>0.5</i>	0 <i>0.0</i>	72 <i>1.3</i>	
Bladder exstrophy	11 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>0.2</i>	
Choanal atresia	70 <i>1.8</i>	29 <i>2.7</i>	3 <i>0.7</i>	4 <i>2.1</i>	1 <i>4.3</i>	110 <i>1.9</i>	
Cleft lip alone	194 <i>4.9</i>	25 <i>2.4</i>	11 <i>2.7</i>	6 <i>3.2</i>	0 <i>0.0</i>	240 <i>4.2</i>	
Cleft lip with cleft palate	209 <i>5.3</i>	39 <i>3.7</i>	20 <i>5.0</i>	10 <i>5.3</i>	2 <i>8.6</i>	287 <i>5.0</i>	
Cleft palate alone	215 <i>5.5</i>	40 <i>3.8</i>	20 <i>5.0</i>	8 <i>4.2</i>	1 <i>4.3</i>	290 <i>5.1</i>	
Cloacal exstrophy	173 <i>4.4</i>	59 <i>5.6</i>	23 <i>5.7</i>	6 <i>3.2</i>	2 <i>8.6</i>	265 <i>4.6</i>	
Clubfoot	493 <i>12.5</i>	153 <i>14.5</i>	29 <i>7.2</i>	32 <i>16.8</i>	5 <i>21.4</i>	720 <i>12.6</i>	
Coarctation of the aorta	873 <i>22.1</i>	447 <i>42.3</i>	82 <i>20.4</i>	47 <i>24.7</i>	4 <i>17.1</i>	1479 <i>25.8</i>	
Common truncus (truncus arteriosus)	49 <i>1.2</i>	20 <i>1.9</i>	0 <i>0.0</i>	3 <i>1.6</i>	1 <i>4.3</i>	73 <i>1.3</i>	
Congenital cataract	72 <i>1.8</i>	16 <i>1.5</i>	5 <i>1.2</i>	4 <i>2.1</i>	0 <i>0.0</i>	99 <i>1.7</i>	
Congenital posterior urethral valves	50 <i>1.3</i>	22 <i>2.1</i>	1 <i>0.2</i>	2 <i>1.1</i>	0 <i>0.0</i>	75 <i>1.3</i>	
Deletion 22q11.2	17 <i>0.4</i>	5 <i>0.5</i>	1 <i>0.2</i>	1 <i>0.5</i>	0 <i>0.0</i>	24 <i>0.4</i>	
Diaphragmatic hernia	116 <i>2.9</i>	33 <i>3.1</i>	16 <i>4.0</i>	11 <i>5.8</i>	1 <i>4.3</i>	181 <i>3.2</i>	
Double outlet right ventricle	96 <i>2.4</i>	25 <i>2.4</i>	11 <i>2.7</i>	9 <i>4.7</i>	0 <i>0.0</i>	141 <i>2.5</i>	
Ebstein anomaly	35 <i>0.9</i>	8 <i>0.8</i>	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	45 <i>0.8</i>	
Encephalocele	34 <i>0.9</i>	9 <i>0.9</i>	2 <i>0.5</i>	1 <i>0.5</i>	0 <i>0.0</i>	47 <i>0.8</i>	
Esophageal atresia/tracheoesophageal fistula	91 <i>2.3</i>	13 <i>1.2</i>	5 <i>1.2</i>	4 <i>2.1</i>	0 <i>0.0</i>	115 <i>2.0</i>	
Gastroschisis	155 <i>3.9</i>	45 <i>4.3</i>	11 <i>2.7</i>	2 <i>1.1</i>	0 <i>0.0</i>	218 <i>3.8</i>	
Holoprosencephaly	213 <i>5.4</i>	92 <i>8.7</i>	18 <i>4.5</i>	11 <i>5.8</i>	1 <i>4.3</i>	347 <i>6.1</i>	
Hypoplastic left heart syndrome	162 <i>4.1</i>	56 <i>5.3</i>	14 <i>3.5</i>	5 <i>2.6</i>	1 <i>4.3</i>	242 <i>4.2</i>	
Hypospadias*	1285 <i>63.5</i>	278 <i>51.7</i>	69 <i>33.8</i>	57 <i>57.9</i>	6 <i>50.0</i>	1731 <i>59.0</i>	
Interrupted aortic arch	37 <i>0.9</i>	9 <i>0.9</i>	2 <i>0.5</i>	4 <i>2.1</i>	0 <i>0.0</i>	52 <i>0.9</i>	
Limb deficiencies (reduction defects)	148 <i>3.8</i>	54 <i>5.1</i>	12 <i>3.0</i>	8 <i>4.2</i>	1 <i>4.3</i>	225 <i>3.9</i>	

Michigan**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Maternal Race/Ethnicity							Notes
Defect	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic	Total**	
Omphalocele	59 <i>1.5</i>	23 <i>2.2</i>	4 <i>1.0</i>	1 <i>0.5</i>	0 <i>0.0</i>	88 <i>1.5</i>	
Pulmonary valve atresia and stenosis	317 <i>8.0</i>	146 <i>13.8</i>	31 <i>7.7</i>	18 <i>9.5</i>	2 <i>8.6</i>	525 <i>9.2</i>	
Pulmonary valve atresia	79 <i>2.0</i>	39 <i>3.7</i>	10 <i>2.5</i>	5 <i>2.6</i>	0 <i>0.0</i>	138 <i>2.4</i>	
Rectal and large intestinal atresia/stenosis	176 <i>4.5</i>	60 <i>5.7</i>	13 <i>3.2</i>	9 <i>4.7</i>	2 <i>8.6</i>	263 <i>4.6</i>	
Renal agenesis/hypoplasia	186 <i>4.7</i>	61 <i>5.8</i>	17 <i>4.2</i>	11 <i>5.8</i>	3 <i>12.9</i>	282 <i>4.9</i>	
Single ventricle	46 <i>1.2</i>	30 <i>2.8</i>	12 <i>3.0</i>	2 <i>1.1</i>	0 <i>0.0</i>	93 <i>1.6</i>	
Small intestinal atresia/stenosis	158 <i>4.0</i>	52 <i>4.9</i>	12 <i>3.0</i>	3 <i>1.6</i>	0 <i>0.0</i>	230 <i>4.0</i>	
Spina bifida without anencephalus	152 <i>3.9</i>	28 <i>2.7</i>	10 <i>2.5</i>	9 <i>4.7</i>	0 <i>0.0</i>	203 <i>3.5</i>	
Tetralogy of Fallot	202 <i>5.1</i>	69 <i>6.5</i>	20 <i>5.0</i>	11 <i>5.8</i>	1 <i>4.3</i>	305 <i>5.3</i>	
Total anomalous pulmonary venous connection	48 <i>1.2</i>	15 <i>1.4</i>	7 <i>1.7</i>	2 <i>1.1</i>	1 <i>4.3</i>	75 <i>1.3</i>	
Transposition of the great arteries (TGA)	203 <i>5.2</i>	51 <i>4.8</i>	18 <i>4.5</i>	18 <i>9.5</i>	1 <i>4.3</i>	293 <i>5.1</i>	
Dextro-transposition of great arteries (d-TGA)	119 <i>3.0</i>	36 <i>3.4</i>	12 <i>3.0</i>	9 <i>4.7</i>	1 <i>4.3</i>	179 <i>3.1</i>	
Tricuspid valve atresia and stenosis	50 <i>1.3</i>	13 <i>1.2</i>	6 <i>1.5</i>	1 <i>0.5</i>	0 <i>0.0</i>	72 <i>1.3</i>	
Trisomy 13	17 <i>0.4</i>	13 <i>1.2</i>	2 <i>0.5</i>	2 <i>1.1</i>	0 <i>0.0</i>	35 <i>0.6</i>	
Trisomy 18	43 <i>1.1</i>	18 <i>1.7</i>	8 <i>2.0</i>	3 <i>1.6</i>	0 <i>0.0</i>	75 <i>1.3</i>	
Trisomy 21 (Down syndrome)	505 <i>12.8</i>	128 <i>12.1</i>	36 <i>9.0</i>	27 <i>14.2</i>	0 <i>0.0</i>	712 <i>12.4</i>	
Turner syndrome†	32 <i>1.7</i>	3 <i>0.6</i>	4 <i>2.0</i>	2 <i>2.2</i>	0 <i>0.0</i>	42 <i>1.5</i>	
Ventricular septal defect	1475 <i>37.4</i>	426 <i>40.4</i>	147 <i>36.7</i>	94 <i>49.4</i>	11 <i>47.1</i>	2183 <i>38.1</i>	1
Total live births §	394150	105554	40106	19018	2333	572776	
Male live births	202262	53739	20418	9839	1200	293457	
Female live births	191882	51810	19687	9178	1133	279304	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Michigan**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	216 <i>4.3</i>	2 <i>0.3</i>	218 <i>3.8</i>	
Trisomy 13	25 <i>0.5</i>	10 <i>1.4</i>	35 <i>0.6</i>	
Trisomy 18	40 <i>0.8</i>	34 <i>4.6</i>	75 <i>1.3</i>	
Trisomy 21 (Down syndrome)	411 <i>8.2</i>	301 <i>40.9</i>	712 <i>12.4</i>	
Total live births	499068	73655	572776	

**Total includes unknown maternal age

Notes

1.Data for this condition include probable cases.

General comments

-Data for conditions include live births only.

Minnesota**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	2 <i>0.3</i>	2 <i>0.9</i>	6 <i>5.1</i>	5 <i>3.0</i>	0 <i>0.0</i>	15 <i>1.3</i>	
Anophthalmia/microphthalmia	5 <i>0.8</i>	4 <i>1.7</i>	2 <i>1.7</i>	1 <i>0.6</i>	0 <i>0.0</i>	12 <i>1.0</i>	
Anotia/microtia	9 <i>1.4</i>	4 <i>1.7</i>	7 <i>6.0</i>	7 <i>4.2</i>	2 <i>14.7</i>	30 <i>2.5</i>	
Aortic valve stenosis	14 <i>2.2</i>	4 <i>1.7</i>	1 <i>0.9</i>	1 <i>0.6</i>	0 <i>0.0</i>	20 <i>1.7</i>	
Atrial septal defect	98 <i>15.5</i>	53 <i>22.7</i>	20 <i>17.0</i>	27 <i>16.1</i>	3 <i>22.1</i>	204 <i>17.2</i>	
Atrioventricular septal defect (Endocardial cushion defect)	33 <i>5.2</i>	15 <i>6.4</i>	10 <i>8.5</i>	7 <i>4.2</i>	1 <i>7.4</i>	68 <i>5.7</i>	1
Biliary atresia	4 <i>0.6</i>	3 <i>1.3</i>	1 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.7</i>	
Bladder exstrophy	3 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.3</i>	
Choanal atresia	9 <i>1.4</i>	4 <i>1.7</i>	2 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>1.3</i>	
Cleft lip alone	17 <i>2.7</i>	5 <i>2.1</i>	3 <i>2.6</i>	8 <i>4.8</i>	0 <i>0.0</i>	36 <i>3.0</i>	
Cleft lip with cleft palate	34 <i>5.4</i>	14 <i>6.0</i>	5 <i>4.3</i>	10 <i>6.0</i>	2 <i>14.7</i>	68 <i>5.7</i>	
Cleft palate alone	50 <i>7.9</i>	10 <i>4.3</i>	3 <i>2.6</i>	6 <i>3.6</i>	0 <i>0.0</i>	69 <i>5.8</i>	
Coarctation of the aorta	35 <i>5.5</i>	10 <i>4.3</i>	5 <i>4.3</i>	3 <i>1.8</i>	1 <i>7.4</i>	57 <i>4.8</i>	
Common truncus (truncus arteriosus)	2 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.6</i>	0 <i>0.0</i>	4 <i>0.3</i>	
Congenital cataract	10 <i>1.6</i>	4 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	14 <i>1.2</i>	
Congenital posterior urethral valves	6 <i>0.9</i>	8 <i>3.4</i>	0 <i>0.0</i>	2 <i>1.2</i>	0 <i>0.0</i>	16 <i>1.4</i>	
Diaphragmatic hernia	19 <i>3.0</i>	5 <i>2.1</i>	4 <i>3.4</i>	5 <i>3.0</i>	0 <i>0.0</i>	33 <i>2.8</i>	
Double outlet right ventricle	9 <i>1.4</i>	6 <i>2.6</i>	3 <i>2.6</i>	1 <i>0.6</i>	1 <i>7.4</i>	20 <i>1.7</i>	
Ebstein anomaly	3 <i>0.5</i>	3 <i>1.3</i>	1 <i>0.9</i>	1 <i>0.6</i>	0 <i>0.0</i>	8 <i>0.7</i>	
Encephalocele	4 <i>0.6</i>	1 <i>0.4</i>	1 <i>0.9</i>	3 <i>1.8</i>	1 <i>7.4</i>	10 <i>0.8</i>	
Esophageal atresia/tracheoesophageal fistula	17 <i>2.7</i>	7 <i>3.0</i>	3 <i>2.6</i>	5 <i>3.0</i>	0 <i>0.0</i>	32 <i>2.7</i>	
Gastroschisis	16 <i>2.5</i>	3 <i>1.3</i>	6 <i>5.1</i>	10 <i>6.0</i>	1 <i>7.4</i>	37 <i>3.1</i>	
Hypoplastic left heart syndrome	13 <i>2.1</i>	5 <i>2.1</i>	3 <i>2.6</i>	1 <i>0.6</i>	0 <i>0.0</i>	23 <i>1.9</i>	
Hypospadias*	245 <i>75.5</i>	81 <i>67.8</i>	18 <i>30.4</i>	17 <i>19.7</i>	3 <i>44.1</i>	376 <i>62.0</i>	
Limb deficiencies (reduction defects)	24 <i>3.8</i>	10 <i>4.3</i>	2 <i>1.7</i>	6 <i>3.6</i>	1 <i>7.4</i>	43 <i>3.6</i>	2
Omphalocele	13 <i>2.1</i>	3 <i>1.3</i>	1 <i>0.9</i>	1 <i>0.6</i>	0 <i>0.0</i>	18 <i>1.5</i>	
Pulmonary valve atresia and stenosis	55 <i>8.7</i>	27 <i>11.6</i>	13 <i>11.1</i>	17 <i>10.2</i>	5 <i>36.8</i>	117 <i>9.9</i>	
Pulmonary valve atresia	4 <i>0.6</i>	5 <i>2.1</i>	0 <i>0.0</i>	1 <i>0.6</i>	1 <i>7.4</i>	11 <i>0.9</i>	
Rectal and large intestinal atresia/stenosis	24 <i>3.8</i>	8 <i>3.4</i>	0 <i>0.0</i>	9 <i>5.4</i>	0 <i>0.0</i>	41 <i>3.5</i>	
Renal agenesis/hypoplasia	32 <i>5.1</i>	11 <i>4.7</i>	5 <i>4.3</i>	7 <i>4.2</i>	0 <i>0.0</i>	56 <i>4.7</i>	

Minnesota**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Single ventricle	3 <i>0.5</i>	1 <i>0.4</i>	0 <i>0.0</i>	1 <i>0.6</i>	0 <i>0.0</i>	5 <i>0.4</i>	
Spina bifida without anencephalus	15 <i>2.4</i>	6 <i>2.6</i>	3 <i>2.6</i>	1 <i>0.6</i>	1 <i>7.4</i>	29 <i>2.5</i>	
Tetralogy of Fallot	23 <i>3.6</i>	2 <i>0.9</i>	3 <i>2.6</i>	6 <i>3.6</i>	0 <i>0.0</i>	36 <i>3.0</i>	3
Transposition of the great arteries (TGA)	17 <i>2.7</i>	8 <i>3.4</i>	4 <i>3.4</i>	3 <i>1.8</i>	1 <i>7.4</i>	33 <i>2.8</i>	
Dextro-transposition of great arteries (d-TGA)	17 <i>2.7</i>	7 <i>3.0</i>	4 <i>3.4</i>	2 <i>1.2</i>	1 <i>7.4</i>	31 <i>2.6</i>	
Tricuspid valve atresia	3 <i>0.5</i>	5 <i>2.1</i>	1 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>0.8</i>	
Trisomy 13	2 <i>0.3</i>	6 <i>2.6</i>	3 <i>2.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>0.9</i>	
Trisomy 18	11 <i>1.7</i>	11 <i>4.7</i>	1 <i>0.9</i>	6 <i>3.6</i>	0 <i>0.0</i>	29 <i>2.5</i>	
Trisomy 21 (Down syndrome)	115 <i>18.2</i>	45 <i>19.3</i>	28 <i>23.8</i>	15 <i>9.0</i>	3 <i>22.1</i>	207 <i>17.5</i>	
Ventricular septal defect	319 <i>50.5</i>	127 <i>54.4</i>	62 <i>52.8</i>	60 <i>35.8</i>	13 <i>95.7</i>	593 <i>50.1</i>	4
Total live births	63194	23347	11752	16742	1358	118308	
Male live births	32458	11940	5914	8628	681	60630	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Minnesota**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	37 <i>3.8</i>	0 <i>0.0</i>	37 <i>3.1</i>	
Trisomy 13	6 <i>0.6</i>	5 <i>2.4</i>	11 <i>0.9</i>	
Trisomy 18	15 <i>1.5</i>	14 <i>6.7</i>	29 <i>2.5</i>	
Trisomy 21 (Down syndrome)	111 <i>11.4</i>	96 <i>45.6</i>	207 <i>17.5</i>	
Total live births	97257	21047	118308	

**Total includes unknown maternal age

Notes

- 1.Data for this condition exclude inlet ventricular septal defect.
- 2.Data for this condition exclude other specified reduction defect of lower limb, transverse reduction defect of lower limb not otherwise specified, unspecified reduction defect of lower limb, and reduction defects of unspecified limb.
- 3.Data for this condition exclude pulmonary artery atresia with septal defect.
- 4.Data for this condition include inlet ventricular septal defect.

General comments

- Data are for Hennepin and Ramsey Counties only.
- Excludes probable and possible cases.

Mississippi
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	1 <i>0.1</i>	5 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Anophthalmia/microphthalmia	6 <i>0.6</i>	5 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>0.6</i>	
Anotia/microtia	14 <i>1.4</i>	14 <i>1.6</i>	2 <i>3.0</i>	1 <i>4.2</i>	2 <i>14.7</i>	34 <i>1.7</i>	
Aortic valve stenosis	19 <i>1.9</i>	4 <i>0.5</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>1.2</i>	
Atrial septal defect	1341 <i>131.3</i>	1566 <i>180.3</i>	45 <i>66.9</i>	23 <i>96.0</i>	64 <i>469.2</i>	3107 <i>155.5</i>	
Atrioventricular septal defect (Endocardial cushion defect)	51 <i>5.0</i>	50 <i>5.8</i>	3 <i>4.5</i>	3 <i>12.5</i>	0 <i>0.0</i>	112 <i>5.6</i>	
Biliary atresia	6 <i>0.6</i>	9 <i>1.0</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	17 <i>0.9</i>	
Bladder exstrophy	3 <i>0.3</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Choanal atresia	3 <i>0.3</i>	2 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Cleft lip alone	25 <i>2.4</i>	11 <i>1.3</i>	1 <i>1.5</i>	1 <i>4.2</i>	1 <i>7.3</i>	43 <i>2.2</i>	
Cleft lip with cleft palate	55 <i>5.4</i>	45 <i>5.2</i>	2 <i>3.0</i>	4 <i>16.7</i>	1 <i>7.3</i>	119 <i>6.0</i>	
Cleft palate alone	33 <i>3.2</i>	19 <i>2.2</i>	3 <i>4.5</i>	2 <i>8.3</i>	0 <i>0.0</i>	61 <i>3.1</i>	
Cloacal exstrophy	1 <i>0.1</i>	2 <i>0.2</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.2</i>	
Clubfoot	2 <i>0.2</i>	0 <i>0.0</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.2</i>	
Coarctation of the aorta	36 <i>3.5</i>	36 <i>4.1</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	73 <i>3.7</i>	
Common truncus (truncus arteriosus)	10 <i>1.0</i>	5 <i>0.6</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.8</i>	
Congenital cataract	2 <i>0.2</i>	9 <i>1.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>0.6</i>	
Congenital posterior urethral valves	18 <i>1.8</i>	24 <i>2.8</i>	1 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	45 <i>2.3</i>	
Deletion 22q11.2	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Diaphragmatic hernia	23 <i>2.3</i>	18 <i>2.1</i>	2 <i>3.0</i>	1 <i>4.2</i>	0 <i>0.0</i>	50 <i>2.5</i>	
Double outlet right ventricle	19 <i>1.9</i>	24 <i>2.8</i>	2 <i>3.0</i>	2 <i>8.3</i>	0 <i>0.0</i>	48 <i>2.4</i>	
Ebstein anomaly	10 <i>1.0</i>	5 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>0.8</i>	
Encephalocele	2 <i>0.2</i>	2 <i>0.2</i>	1 <i>1.5</i>	0 <i>0.0</i>	1 <i>7.3</i>	6 <i>0.3</i>	
Esophageal atresia/tracheoesophageal fistula	28 <i>2.7</i>	17 <i>2.0</i>	2 <i>3.0</i>	0 <i>0.0</i>	2 <i>14.7</i>	50 <i>2.5</i>	
Holoprosencephaly	2 <i>0.2</i>	2 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.2</i>	
Hypoplastic left heart syndrome	44 <i>4.3</i>	23 <i>2.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	68 <i>3.4</i>	
Hypospadias*	358 <i>68.2</i>	404 <i>92.8</i>	8 <i>23.8</i>	4 <i>32.5</i>	1 <i>15.1</i>	789 <i>77.7</i>	
Interrupted aortic arch	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	
Limb deficiencies (reduction defects)	37 <i>3.6</i>	36 <i>4.1</i>	1 <i>1.5</i>	1 <i>4.2</i>	1 <i>7.3</i>	76 <i>3.8</i>	
Pulmonary valve atresia and stenosis	125 <i>12.2</i>	131 <i>15.1</i>	3 <i>4.5</i>	3 <i>12.5</i>	1 <i>7.3</i>	271 <i>13.6</i>	

Mississippi**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Rectal and large intestinal atresia/stenosis	29 <i>2.8</i>	33 <i>3.8</i>	2 <i>3.0</i>	2 <i>8.3</i>	1 <i>7.3</i>	68 <i>3.4</i>	
Renal agenesis/hypoplasia	12 <i>1.2</i>	14 <i>1.6</i>	1 <i>1.5</i>	1 <i>4.2</i>	1 <i>7.3</i>	29 <i>1.5</i>	
Single ventricle	0 <i>0.0</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	
Small intestinal atresia/stenosis	4 <i>0.4</i>	4 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.4</i>	
Spina bifida without anencephalus	31 <i>3.0</i>	24 <i>2.8</i>	1 <i>1.5</i>	1 <i>4.2</i>	0 <i>0.0</i>	59 <i>3.0</i>	
Tetralogy of Fallot	61 <i>6.0</i>	58 <i>6.7</i>	2 <i>3.0</i>	1 <i>4.2</i>	0 <i>0.0</i>	124 <i>6.2</i>	
Total anomalous pulmonary venous connection	2 <i>0.2</i>	1 <i>0.1</i>	0 <i>0.0</i>	1 <i>4.2</i>	0 <i>0.0</i>	4 <i>0.2</i>	
Transposition of the great arteries (TGA)	23 <i>2.3</i>	17 <i>2.0</i>	0 <i>0.0</i>	3 <i>12.5</i>	1 <i>7.3</i>	44 <i>2.2</i>	
Tricuspid valve atresia and stenosis	7 <i>0.7</i>	17 <i>2.0</i>	0 <i>0.0</i>	2 <i>8.3</i>	0 <i>0.0</i>	27 <i>1.4</i>	
Trisomy 13	4 <i>0.4</i>	6 <i>0.7</i>	0 <i>0.0</i>	1 <i>4.2</i>	0 <i>0.0</i>	11 <i>0.6</i>	
Trisomy 18	16 <i>1.6</i>	7 <i>0.8</i>	2 <i>3.0</i>	0 <i>0.0</i>	1 <i>7.3</i>	26 <i>1.3</i>	
Trisomy 21 (Down syndrome)	98 <i>9.6</i>	78 <i>9.0</i>	6 <i>8.9</i>	1 <i>4.2</i>	3 <i>22.0</i>	191 <i>9.6</i>	
Turner syndrome†	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	
Ventricular septal defect	575 <i>56.3</i>	527 <i>60.7</i>	34 <i>50.6</i>	13 <i>54.3</i>	17 <i>124.6</i>	1190 <i>59.5</i>	1
Total live births	102170	86879	6725	2396	1364	199847	
Male live births	52519	43553	3362	1231	663	101497	
Female live births	49651	43326	3363	1165	701	98350	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Mississippi**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Trisomy 13	11 <i>0.6</i>	0 <i>0.0</i>	11 <i>0.6</i>	
Trisomy 18	16 <i>0.9</i>	10 <i>6.4</i>	26 <i>1.3</i>	
Trisomy 21 (Down syndrome)	116 <i>6.3</i>	75 <i>48.0</i>	191 <i>9.6</i>	
Total live births	184215	15618	199847	

**Total includes unknown maternal age

Notes

1.Data for this condition does not include probable cases.

Missouri**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	37 <i>1.3</i>	5 <i>0.9</i>	7 <i>3.4</i>	1 <i>1.1</i>	0 <i>0.0</i>	51 <i>1.3</i>	
Anophthalmia/microphthalmia	29 <i>1.0</i>	4 <i>0.7</i>	2 <i>1.0</i>	1 <i>1.1</i>	0 <i>0.0</i>	36 <i>0.9</i>	
Anotia/microtia	13 <i>0.5</i>	5 <i>0.9</i>	5 <i>2.4</i>	3 <i>3.3</i>	0 <i>0.0</i>	26 <i>0.7</i>	
Aortic valve stenosis	50 <i>1.7</i>	1 <i>0.2</i>	3 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	54 <i>1.4</i>	
Atrial septal defect	3716 <i>129.5</i>	1012 <i>182.9</i>	256 <i>123.6</i>	94 <i>102.4</i>	19 <i>192.3</i>	5233 <i>136.9</i>	
Atrioventricular septal defect (Endocardial cushion defect)	129 <i>4.5</i>	24 <i>4.3</i>	6 <i>2.9</i>	2 <i>2.2</i>	0 <i>0.0</i>	163 <i>4.3</i>	
Biliary atresia	25 <i>0.9</i>	8 <i>1.4</i>	1 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	35 <i>0.9</i>	
Bladder exstrophy	14 <i>0.5</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>0.4</i>	
Choanal atresia	64 <i>2.2</i>	8 <i>1.4</i>	3 <i>1.4</i>	1 <i>1.1</i>	0 <i>0.0</i>	77 <i>2.0</i>	
Cleft lip alone	182 <i>6.3</i>	20 <i>3.6</i>	11 <i>5.3</i>	4 <i>4.4</i>	2 <i>20.2</i>	226 <i>5.9</i>	
Cleft lip with cleft palate	206 <i>7.2</i>	32 <i>5.8</i>	12 <i>5.8</i>	2 <i>2.2</i>	2 <i>20.2</i>	268 <i>7.0</i>	
Cleft palate alone	199 <i>6.9</i>	18 <i>3.3</i>	14 <i>6.8</i>	4 <i>4.4</i>	0 <i>0.0</i>	236 <i>6.2</i>	
Cloacal exstrophy	199 <i>6.9</i>	69 <i>12.5</i>	11 <i>5.3</i>	7 <i>7.6</i>	0 <i>0.0</i>	294 <i>7.7</i>	
Clubfoot	504 <i>17.6</i>	92 <i>16.6</i>	25 <i>12.1</i>	15 <i>16.3</i>	2 <i>20.2</i>	654 <i>17.1</i>	
Coarctation of the aorta	194 <i>6.8</i>	25 <i>4.5</i>	13 <i>6.3</i>	3 <i>3.3</i>	0 <i>0.0</i>	240 <i>6.3</i>	
Common truncus (truncus arteriosus)	16 <i>0.6</i>	3 <i>0.5</i>	3 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.6</i>	
Congenital cataract	61 <i>2.1</i>	12 <i>2.2</i>	4 <i>1.9</i>	2 <i>2.2</i>	2 <i>20.2</i>	83 <i>2.2</i>	
Congenital posterior urethral valves	43 <i>1.5</i>	15 <i>2.7</i>	4 <i>1.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	65 <i>1.7</i>	
Deletion 22q11.2	25 <i>0.9</i>	2 <i>0.4</i>	1 <i>0.5</i>	1 <i>1.1</i>	0 <i>0.0</i>	29 <i>0.8</i>	
Diaphragmatic hernia	130 <i>4.5</i>	37 <i>6.7</i>	5 <i>2.4</i>	2 <i>2.2</i>	0 <i>0.0</i>	175 <i>4.6</i>	
Double outlet right ventricle	66 <i>2.3</i>	22 <i>4.0</i>	5 <i>2.4</i>	2 <i>2.2</i>	0 <i>0.0</i>	97 <i>2.5</i>	
Ebstein anomaly	24 <i>0.8</i>	1 <i>0.2</i>	4 <i>1.9</i>	2 <i>2.2</i>	0 <i>0.0</i>	33 <i>0.9</i>	
Encephalocele	27 <i>0.9</i>	12 <i>2.2</i>	3 <i>1.4</i>	1 <i>1.1</i>	0 <i>0.0</i>	44 <i>1.2</i>	
Esophageal atresia/tracheoesophageal fistula	99 <i>3.4</i>	15 <i>2.7</i>	2 <i>1.0</i>	2 <i>2.2</i>	1 <i>10.1</i>	123 <i>3.2</i>	
Gastroschisis	164 <i>5.7</i>	38 <i>6.9</i>	16 <i>7.7</i>	3 <i>3.3</i>	0 <i>0.0</i>	225 <i>5.9</i>	
Holoprosencephaly	170 <i>5.9</i>	34 <i>6.1</i>	15 <i>7.2</i>	3 <i>3.3</i>	1 <i>10.1</i>	230 <i>6.0</i>	
Hypoplastic left heart syndrome	92 <i>3.2</i>	16 <i>2.9</i>	3 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	111 <i>2.9</i>	
Hypospadias*	1390 <i>94.2</i>	290 <i>102.6</i>	52 <i>49.5</i>	38 <i>79.6</i>	6 <i>121.5</i>	1808 <i>92.1</i>	
Interrupted aortic arch	15 <i>0.5</i>	4 <i>0.7</i>	3 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	22 <i>0.6</i>	
Limb deficiencies (reduction defects)	126 <i>4.4</i>	28 <i>5.1</i>	9 <i>4.3</i>	2 <i>2.2</i>	0 <i>0.0</i>	169 <i>4.4</i>	

Missouri**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	74 <i>2.6</i>	18 <i>3.3</i>	8 <i>3.9</i>	1 <i>1.1</i>	0 <i>0.0</i>	104 <i>2.7</i>	
Pulmonary valve atresia and stenosis	292 <i>10.2</i>	75 <i>13.6</i>	23 <i>11.1</i>	4 <i>4.4</i>	1 <i>10.1</i>	403 <i>10.5</i>	
Pulmonary valve atresia	43 <i>1.5</i>	14 <i>2.5</i>	2 <i>1.0</i>	1 <i>1.1</i>	0 <i>0.0</i>	61 <i>1.6</i>	
Rectal and large intestinal atresia/stenosis	145 <i>5.1</i>	25 <i>4.5</i>	7 <i>3.4</i>	7 <i>7.6</i>	2 <i>20.2</i>	190 <i>5.0</i>	
Renal agenesis/hypoplasia	127 <i>4.4</i>	38 <i>6.9</i>	8 <i>3.9</i>	6 <i>6.5</i>	0 <i>0.0</i>	181 <i>4.7</i>	
Single ventricle	28 <i>1.0</i>	8 <i>1.4</i>	1 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	38 <i>1.0</i>	
Small intestinal atresia/stenosis	113 <i>3.9</i>	31 <i>5.6</i>	8 <i>3.9</i>	2 <i>2.2</i>	0 <i>0.0</i>	159 <i>4.2</i>	
Spina bifida without anencephalus	85 <i>3.0</i>	6 <i>1.1</i>	7 <i>3.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	101 <i>2.6</i>	
Tetralogy of Fallot	130 <i>4.5</i>	33 <i>6.0</i>	13 <i>6.3</i>	3 <i>3.3</i>	2 <i>20.2</i>	183 <i>4.8</i>	
Total anomalous pulmonary venous connection	20 <i>0.7</i>	4 <i>0.7</i>	1 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>0.7</i>	
Transposition of the great arteries (TGA)	123 <i>4.3</i>	13 <i>2.3</i>	6 <i>2.9</i>	3 <i>3.3</i>	0 <i>0.0</i>	146 <i>3.8</i>	
Dextro-transposition of great arteries (d-TGA)	113 <i>3.9</i>	10 <i>1.8</i>	4 <i>1.9</i>	2 <i>2.2</i>	0 <i>0.0</i>	130 <i>3.4</i>	
Tricuspid valve atresia and stenosis	35 <i>1.2</i>	10 <i>1.8</i>	1 <i>0.5</i>	1 <i>1.1</i>	0 <i>0.0</i>	47 <i>1.2</i>	
Trisomy 13	22 <i>0.8</i>	6 <i>1.1</i>	3 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	31 <i>0.8</i>	
Trisomy 18	40 <i>1.4</i>	11 <i>2.0</i>	7 <i>3.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	58 <i>1.5</i>	
Trisomy 21 (Down syndrome)	382 <i>13.3</i>	64 <i>11.6</i>	46 <i>22.2</i>	11 <i>12.0</i>	4 <i>40.5</i>	519 <i>13.6</i>	
Turner syndrome†	23 <i>1.6</i>	2 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	26 <i>1.4</i>	
Ventricular septal defect	1359 <i>47.3</i>	281 <i>50.8</i>	116 <i>56.0</i>	35 <i>38.1</i>	3 <i>30.4</i>	1831 <i>47.9</i>	
Total live births §	287030	55345	20709	9184	988	382280	
Male live births	147495	28276	10504	4774	494	196224	
Female live births	139531	27067	10204	4410	494	186049	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Missouri**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	220 <i>6.4</i>	5 <i>1.2</i>	225 <i>5.9</i>	
Trisomy 13	20 <i>0.6</i>	11 <i>2.7</i>	31 <i>0.8</i>	
Trisomy 18	36 <i>1.1</i>	22 <i>5.4</i>	58 <i>1.5</i>	
Trisomy 21 (Down syndrome)	300 <i>8.8</i>	219 <i>53.4</i>	519 <i>13.6</i>	
Total live births	341198	41026	382280	

**Total includes unknown maternal age

Nebraska**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	13 <i>1.3</i>	0 <i>0.0</i>	8 <i>4.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>1.6</i>	
Anophthalmia/microphthalmia	14 <i>1.5</i>	1 <i>1.1</i>	0 <i>0.0</i>	1 <i>2.8</i>	1 <i>5.1</i>	20 <i>1.5</i>	
Anotia/microtia	17 <i>1.8</i>	0 <i>0.0</i>	13 <i>6.7</i>	1 <i>2.8</i>	0 <i>0.0</i>	31 <i>2.4</i>	
Aortic valve stenosis	23 <i>2.4</i>	0 <i>0.0</i>	3 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>2.1</i>	
Atrial septal defect	167 <i>17.3</i>	9 <i>10.3</i>	28 <i>14.4</i>	7 <i>19.8</i>	3 <i>15.4</i>	218 <i>16.7</i>	
Atrioventricular septal defect (Endocardial cushion defect)	23 <i>2.4</i>	1 <i>1.1</i>	4 <i>2.1</i>	2 <i>5.7</i>	0 <i>0.0</i>	32 <i>2.5</i>	
Biliary atresia	4 <i>0.4</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.4</i>	
Bladder exstrophy	6 <i>0.6</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.5</i>	
Choanal atresia	19 <i>2.0</i>	1 <i>1.1</i>	4 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>1.8</i>	
Cleft lip alone	38 <i>3.9</i>	3 <i>3.4</i>	9 <i>4.6</i>	5 <i>14.1</i>	3 <i>15.4</i>	59 <i>4.5</i>	
Cleft lip with cleft palate	56 <i>5.8</i>	4 <i>4.6</i>	14 <i>7.2</i>	6 <i>17.0</i>	4 <i>20.6</i>	87 <i>6.7</i>	
Cleft palate alone	56 <i>5.8</i>	5 <i>5.7</i>	11 <i>5.7</i>	4 <i>11.3</i>	1 <i>5.1</i>	83 <i>6.4</i>	
Cloacal exstrophy	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Clubfoot	160 <i>16.6</i>	14 <i>16.1</i>	31 <i>16.0</i>	5 <i>14.1</i>	3 <i>15.4</i>	216 <i>16.5</i>	
Coarctation of the aorta	87 <i>9.0</i>	0 <i>0.0</i>	13 <i>6.7</i>	3 <i>8.5</i>	0 <i>0.0</i>	107 <i>8.2</i>	
Common truncus (truncus arteriosus)	8 <i>0.8</i>	1 <i>1.1</i>	2 <i>1.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.9</i>	
Congenital cataract	22 <i>2.3</i>	0 <i>0.0</i>	4 <i>2.1</i>	3 <i>8.5</i>	0 <i>0.0</i>	30 <i>2.3</i>	
Congenital posterior urethral valves	5 <i>0.5</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.5</i>	
Craniosynostosis	21 <i>2.2</i>	0 <i>0.0</i>	3 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	24 <i>1.8</i>	
Deletion 22q11.2	2 <i>0.2</i>	1 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.3</i>	
Diaphragmatic hernia	12 <i>1.2</i>	2 <i>2.3</i>	6 <i>3.1</i>	1 <i>2.8</i>	2 <i>10.3</i>	23 <i>1.8</i>	
Double outlet right ventricle	12 <i>1.2</i>	2 <i>2.3</i>	2 <i>1.0</i>	1 <i>2.8</i>	2 <i>10.3</i>	19 <i>1.5</i>	
Ebstein anomaly	6 <i>0.6</i>	0 <i>0.0</i>	2 <i>1.0</i>	0 <i>0.0</i>	1 <i>5.1</i>	10 <i>0.8</i>	
Encephalocele	9 <i>0.9</i>	0 <i>0.0</i>	1 <i>0.5</i>	1 <i>2.8</i>	1 <i>5.1</i>	12 <i>0.9</i>	
Esophageal atresia/tracheoesophageal fistula	24 <i>2.5</i>	1 <i>1.1</i>	6 <i>3.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	31 <i>2.4</i>	
Gastroschisis	48 <i>5.0</i>	3 <i>3.4</i>	11 <i>5.7</i>	2 <i>5.7</i>	5 <i>25.7</i>	72 <i>5.5</i>	
Holoprosencephaly	6 <i>0.6</i>	1 <i>1.1</i>	3 <i>1.5</i>	1 <i>2.8</i>	0 <i>0.0</i>	11 <i>0.8</i>	
Hypoplastic left heart syndrome	42 <i>4.4</i>	5 <i>5.7</i>	5 <i>2.6</i>	0 <i>0.0</i>	2 <i>10.3</i>	56 <i>4.3</i>	
Hypospadias*	428 <i>86.7</i>	33 <i>75.5</i>	46 <i>46.1</i>	3 <i>16.7</i>	1 <i>9.8</i>	529 <i>79.2</i>	
Interrupted aortic arch	11 <i>1.1</i>	0 <i>0.0</i>	2 <i>1.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>1.0</i>	

Nebraska**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	57 <i>5.9</i>	5 <i>5.7</i>	9 <i>4.6</i>	1 <i>2.8</i>	1 <i>5.1</i>	75 <i>5.7</i>	
Omphalocele	24 <i>2.5</i>	3 <i>3.4</i>	1 <i>0.5</i>	1 <i>2.8</i>	0 <i>0.0</i>	30 <i>2.3</i>	
Pulmonary valve atresia and stenosis	5337 <i>553.3</i>	490 <i>563.0</i>	924 <i>475.6</i>	158 <i>446.5</i>	55 <i>282.8</i>	7143 <i>546.9</i>	
Pulmonary valve atresia	17 <i>1.8</i>	2 <i>2.3</i>	7 <i>3.6</i>	0 <i>0.0</i>	2 <i>10.3</i>	28 <i>2.1</i>	
Rectal and large intestinal atresia/stenosis	49 <i>5.1</i>	5 <i>5.7</i>	10 <i>5.1</i>	4 <i>11.3</i>	0 <i>0.0</i>	71 <i>5.4</i>	
Renal agenesis/hypoplasia	71 <i>7.4</i>	6 <i>6.9</i>	14 <i>7.2</i>	1 <i>2.8</i>	1 <i>5.1</i>	95 <i>7.3</i>	
Single ventricle	28 <i>2.9</i>	3 <i>3.4</i>	2 <i>1.0</i>	0 <i>0.0</i>	1 <i>5.1</i>	35 <i>2.7</i>	
Small intestinal atresia/stenosis	22 <i>2.3</i>	5 <i>5.7</i>	7 <i>3.6</i>	2 <i>5.7</i>	0 <i>0.0</i>	36 <i>2.8</i>	
Spina bifida without anencephalus	55 <i>5.7</i>	3 <i>3.4</i>	12 <i>6.2</i>	0 <i>0.0</i>	1 <i>5.1</i>	73 <i>5.6</i>	
Tetralogy of Fallot	32 <i>3.3</i>	2 <i>2.3</i>	5 <i>2.6</i>	2 <i>5.7</i>	1 <i>5.1</i>	42 <i>3.2</i>	
Total anomalous pulmonary venous connection	7 <i>0.7</i>	1 <i>1.1</i>	7 <i>3.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>1.2</i>	
Transposition of the great arteries (TGA)	56 <i>5.8</i>	2 <i>2.3</i>	5 <i>2.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	67 <i>5.1</i>	
Dextro-transposition of great arteries (d-TGA)	45 <i>4.7</i>	2 <i>2.3</i>	4 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	55 <i>4.2</i>	
Tricuspid valve atresia and stenosis	14 <i>1.5</i>	4 <i>4.6</i>	1 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>1.6</i>	
Trisomy 13	12 <i>1.2</i>	3 <i>3.4</i>	6 <i>3.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>1.6</i>	
Trisomy 18	38 <i>3.9</i>	5 <i>5.7</i>	8 <i>4.1</i>	2 <i>5.7</i>	0 <i>0.0</i>	54 <i>4.1</i>	
Trisomy 21 (Down syndrome)	184 <i>19.1</i>	8 <i>9.2</i>	40 <i>20.6</i>	5 <i>14.1</i>	1 <i>5.1</i>	244 <i>18.7</i>	
Turner syndrome†	14 <i>3.0</i>	1 <i>2.3</i>	4 <i>4.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>3.0</i>	
Ventricular septal defect	441 <i>45.7</i>	23 <i>26.4</i>	98 <i>50.4</i>	12 <i>33.9</i>	4 <i>20.6</i>	606 <i>46.4</i>	
Total live births §	96466	8703	19429	3539	1945	130602	
Male live births	49392	4373	9987	1792	1019	66822	
Female live births	47074	4330	9440	1747	926	63778	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Nebraska**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	68 <i>5.9</i>	4 <i>2.6</i>	72 <i>5.5</i>	
Trisomy 13	16 <i>1.4</i>	5 <i>3.3</i>	21 <i>1.6</i>	
Trisomy 18	30 <i>2.6</i>	24 <i>15.6</i>	54 <i>4.1</i>	
Trisomy 21 (Down syndrome)	145 <i>12.6</i>	100 <i>65.1</i>	245 <i>18.8</i>	
Total live births	115230	15367	130602	

**Total includes unknown maternal age

Nevada**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	2 <i>0.3</i>	1 <i>0.6</i>	2 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.3</i>	
Anophthalmia/microphthalmia	6 <i>0.8</i>	4 <i>2.2</i>	11 <i>1.7</i>	2 <i>1.4</i>	0 <i>0.0</i>	23 <i>1.3</i>	
Anotia/microtia	5 <i>0.7</i>	0 <i>0.0</i>	4 <i>0.6</i>	1 <i>0.7</i>	0 <i>0.0</i>	10 <i>0.6</i>	
Aortic valve stenosis	12 <i>1.6</i>	0 <i>0.0</i>	9 <i>1.4</i>	1 <i>0.9</i>	0 <i>0.0</i>	23 <i>1.3</i>	
Atrial septal defect	1192 <i>158.6</i>	434 <i>240.3</i>	990 <i>151.7</i>	248 <i>173.0</i>	17 <i>96.0</i>	2967 <i>167.1</i>	
Atrioventricular septal defect (Endocardial cushion defect)	14 <i>1.9</i>	8 <i>4.4</i>	12 <i>1.8</i>	2 <i>1.4</i>	0 <i>0.0</i>	37 <i>2.1</i>	
Biliary atresia	6 <i>0.8</i>	0 <i>0.0</i>	2 <i>0.3</i>	1 <i>0.7</i>	0 <i>0.0</i>	10 <i>0.6</i>	
Bladder exstrophy	3 <i>0.4</i>	0 <i>0.0</i>	2 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>0.3</i>	
Choanal atresia	8 <i>1.1</i>	1 <i>0.6</i>	6 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	17 <i>1.0</i>	
Cleft lip alone	25 <i>3.3</i>	4 <i>2.2</i>	12 <i>1.8</i>	6 <i>4.2</i>	0 <i>0.0</i>	47 <i>2.6</i>	
Cleft lip with cleft palate	43 <i>5.7</i>	16 <i>8.9</i>	57 <i>8.7</i>	2 <i>1.4</i>	0 <i>0.0</i>	121 <i>6.8</i>	
Cleft palate alone	40 <i>5.3</i>	7 <i>3.9</i>	25 <i>3.8</i>	3 <i>2.1</i>	1 <i>5.6</i>	78 <i>4.4</i>	
Cloacal exstrophy	22 <i>2.9</i>	6 <i>3.3</i>	14 <i>2.1</i>	4 <i>2.8</i>	0 <i>0.0</i>	50 <i>2.8</i>	
Clubfoot	88 <i>11.7</i>	16 <i>8.9</i>	78 <i>12.0</i>	11 <i>7.7</i>	1 <i>5.6</i>	202 <i>11.4</i>	
Coarctation of the aorta	48 <i>6.4</i>	10 <i>5.5</i>	43 <i>6.6</i>	6 <i>4.2</i>	0 <i>0.0</i>	110 <i>6.2</i>	
Common truncus (truncus arteriosus)	1 <i>0.1</i>	1 <i>0.6</i>	6 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.5</i>	
Congenital cataract	3 <i>0.5</i>	3 <i>2.1</i>	4 <i>0.8</i>	1 <i>0.9</i>	0 <i>0.0</i>	11 <i>0.8</i>	
Congenital posterior urethral valves	5 <i>0.7</i>	0 <i>0.0</i>	2 <i>0.3</i>	1 <i>0.7</i>	0 <i>0.0</i>	8 <i>0.5</i>	
Craniosynostosis	70 <i>9.3</i>	13 <i>7.2</i>	35 <i>5.4</i>	5 <i>3.5</i>	0 <i>0.0</i>	133 <i>7.5</i>	
Deletion 22q11.2	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	
Diaphragmatic hernia	16 <i>2.1</i>	5 <i>2.8</i>	20 <i>3.1</i>	3 <i>2.1</i>	0 <i>0.0</i>	45 <i>2.5</i>	
Double outlet right ventricle	9 <i>1.2</i>	3 <i>1.7</i>	14 <i>2.1</i>	1 <i>0.7</i>	0 <i>0.0</i>	29 <i>1.6</i>	
Ebstein anomaly	4 <i>0.7</i>	0 <i>0.0</i>	3 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.5</i>	
Encephalocele	7 <i>0.9</i>	1 <i>0.6</i>	1 <i>0.2</i>	2 <i>1.4</i>	0 <i>0.0</i>	12 <i>0.7</i>	
Esophageal atresia/tracheoesophageal fistula	17 <i>2.3</i>	3 <i>1.7</i>	17 <i>2.6</i>	1 <i>0.7</i>	0 <i>0.0</i>	38 <i>2.1</i>	
Holoprosencephaly	39 <i>5.2</i>	13 <i>7.2</i>	24 <i>3.7</i>	13 <i>9.1</i>	0 <i>0.0</i>	90 <i>5.1</i>	
Hypoplastic left heart syndrome	15 <i>2.0</i>	4 <i>2.2</i>	14 <i>2.1</i>	1 <i>0.7</i>	0 <i>0.0</i>	37 <i>2.1</i>	
Hypospadias*	175 <i>45.3</i>	37 <i>40.3</i>	78 <i>23.3</i>	23 <i>30.7</i>	1 <i>11.0</i>	327 <i>35.9</i>	
Interrupted aortic arch	6 <i>0.8</i>	2 <i>1.1</i>	7 <i>1.1</i>	1 <i>0.7</i>	0 <i>0.0</i>	16 <i>0.9</i>	
Limb deficiencies (reduction defects)	31 <i>4.1</i>	7 <i>3.9</i>	18 <i>2.8</i>	2 <i>1.4</i>	1 <i>5.6</i>	60 <i>3.4</i>	

Nevada**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Pulmonary valve atresia and stenosis	82 <i>10.9</i>	35 <i>19.4</i>	55 <i>8.4</i>	8 <i>5.6</i>	3 <i>16.9</i>	189 <i>10.6</i>	
Pulmonary valve atresia	10 <i>1.3</i>	1 <i>0.6</i>	11 <i>1.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>1.3</i>	
Rectal and large intestinal atresia/stenosis	27 <i>3.6</i>	2 <i>1.1</i>	28 <i>4.3</i>	4 <i>2.8</i>	0 <i>0.0</i>	63 <i>3.5</i>	
Renal agenesis/hypoplasia	28 <i>3.7</i>	6 <i>3.3</i>	27 <i>4.1</i>	6 <i>4.2</i>	3 <i>16.9</i>	73 <i>4.1</i>	
Single ventricle	5 <i>0.7</i>	3 <i>1.7</i>	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>0.5</i>	
Small intestinal atresia/stenosis	31 <i>4.1</i>	8 <i>4.4</i>	23 <i>3.5</i>	4 <i>2.8</i>	1 <i>5.6</i>	67 <i>3.8</i>	
Spina bifida without anencephalus	17 <i>2.3</i>	8 <i>4.4</i>	12 <i>1.8</i>	3 <i>2.1</i>	0 <i>0.0</i>	43 <i>2.4</i>	
Tetralogy of Fallot	22 <i>2.9</i>	5 <i>2.8</i>	26 <i>4.0</i>	5 <i>3.5</i>	2 <i>11.3</i>	61 <i>3.4</i>	
Total anomalous pulmonary venous connection	6 <i>0.8</i>	0 <i>0.0</i>	3 <i>0.5</i>	1 <i>0.7</i>	0 <i>0.0</i>	11 <i>0.6</i>	
Transposition of the great arteries (TGA)	9 <i>1.2</i>	6 <i>3.3</i>	6 <i>0.9</i>	1 <i>0.7</i>	0 <i>0.0</i>	23 <i>1.3</i>	
Dextro-transposition of great arteries (d-TGA)	7 <i>0.9</i>	5 <i>2.8</i>	4 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	17 <i>1.0</i>	
Tricuspid valve atresia and stenosis	19 <i>2.5</i>	11 <i>6.1</i>	13 <i>2.0</i>	3 <i>2.1</i>	0 <i>0.0</i>	50 <i>2.8</i>	
Tricuspid valve atresia	1 <i>0.7</i>	0 <i>0.0</i>	1 <i>0.8</i>	1 <i>3.5</i>	0 <i>0.0</i>	3 <i>0.9</i>	
Trisomy 13	6 <i>0.8</i>	1 <i>0.6</i>	7 <i>1.1</i>	1 <i>0.7</i>	0 <i>0.0</i>	15 <i>0.8</i>	
Trisomy 18	8 <i>1.1</i>	1 <i>0.6</i>	10 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>1.3</i>	
Trisomy 21 (Down syndrome)	77 <i>10.2</i>	19 <i>10.5</i>	121 <i>18.5</i>	16 <i>11.2</i>	2 <i>11.3</i>	244 <i>13.7</i>	
Turner syndrome†	4 <i>1.1</i>	2 <i>2.3</i>	5 <i>1.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>1.3</i>	
Ventricular septal defect	366 <i>48.7</i>	70 <i>38.8</i>	329 <i>50.4</i>	50 <i>34.9</i>	7 <i>39.5</i>	859 <i>48.4</i>	1
Total live births	75172	18058	65253	14335	1771	177507	
Male live births	38645	9179	33415	7499	908	91160	
Female live births	36527	8879	31838	6836	863	86347	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Nevada**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Trisomy 13	8 <i>0.5</i>	6 <i>2.3</i>	15 <i>0.8</i>	
Trisomy 18	13 <i>0.9</i>	5 <i>1.9</i>	23 <i>1.3</i>	
Trisomy 21 (Down syndrome)	111 <i>7.3</i>	95 <i>36.2</i>	244 <i>13.7</i>	
Total live births	151026	26233	177507	

**Total includes unknown maternal age

Notes

1.Data for this condition excluded if less than 2500 grams birth weight or less than 36 weeks gestation.

General comments

- Data for conditions include live births and resident births only.
- Data for this condition exclude probable/possible cases.

New Jersey
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	3 <i>0.1</i>	0 <i>0.0</i>	2 <i>0.1</i>	1 <i>0.2</i>	0 <i>0.0</i>	6 <i>0.1</i>	
Anophthalmia/microphthalmia	15 <i>0.6</i>	7 <i>0.9</i>	10 <i>0.7</i>	3 <i>0.5</i>	1 <i>17.7</i>	41 <i>0.8</i>	
Anotia/microtia	41 <i>1.8</i>	8 <i>1.0</i>	71 <i>5.2</i>	9 <i>1.6</i>	0 <i>0.0</i>	130 <i>2.5</i>	
Aortic valve stenosis	17 <i>0.7</i>	3 <i>0.4</i>	13 <i>0.9</i>	1 <i>0.2</i>	0 <i>0.0</i>	38 <i>0.7</i>	
Atrial septal defect	508 <i>21.7</i>	407 <i>52.3</i>	464 <i>33.7</i>	122 <i>22.2</i>	5 <i>88.7</i>	1556 <i>29.7</i>	
Atrioventricular septal defect (Endocardial cushion defect)	56 <i>2.4</i>	27 <i>3.5</i>	39 <i>2.8</i>	3 <i>0.5</i>	0 <i>0.0</i>	130 <i>2.5</i>	
Biliary atresia	10 <i>0.4</i>	5 <i>0.6</i>	13 <i>0.9</i>	2 <i>0.4</i>	0 <i>0.0</i>	31 <i>0.6</i>	
Bladder exstrophy	3 <i>0.1</i>	0 <i>0.0</i>	3 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.2</i>	
Choanal atresia	27 <i>1.2</i>	12 <i>1.5</i>	17 <i>1.2</i>	1 <i>0.2</i>	0 <i>0.0</i>	58 <i>1.1</i>	
Cleft lip alone	69 <i>2.9</i>	16 <i>2.1</i>	53 <i>3.8</i>	13 <i>2.4</i>	0 <i>0.0</i>	159 <i>3.0</i>	
Cleft lip with cleft palate	83 <i>3.5</i>	21 <i>2.7</i>	59 <i>4.3</i>	18 <i>3.3</i>	1 <i>17.7</i>	186 <i>3.6</i>	
Cleft palate alone	136 <i>5.8</i>	24 <i>3.1</i>	78 <i>5.7</i>	43 <i>7.8</i>	0 <i>0.0</i>	290 <i>5.5</i>	
Cloacal exstrophy	49 <i>2.1</i>	19 <i>2.4</i>	42 <i>3.1</i>	13 <i>2.4</i>	0 <i>0.0</i>	126 <i>2.4</i>	
Clubfoot	231 <i>9.9</i>	96 <i>12.3</i>	137 <i>9.9</i>	44 <i>8.0</i>	1 <i>17.7</i>	531 <i>10.2</i>	
Coarctation of the aorta	84 <i>3.6</i>	18 <i>2.3</i>	47 <i>3.4</i>	12 <i>2.2</i>	1 <i>17.7</i>	175 <i>3.3</i>	
Common truncus (truncus arteriosus)	8 <i>0.3</i>	5 <i>0.6</i>	6 <i>0.4</i>	1 <i>0.2</i>	0 <i>0.0</i>	23 <i>0.4</i>	
Congenital cataract	32 <i>1.4</i>	17 <i>2.2</i>	37 <i>2.7</i>	7 <i>1.3</i>	1 <i>17.7</i>	97 <i>1.9</i>	
Congenital posterior urethral valves	22 <i>0.9</i>	14 <i>1.8</i>	11 <i>0.8</i>	4 <i>0.7</i>	0 <i>0.0</i>	54 <i>1.0</i>	
Deletion 22q11.2	4 <i>0.2</i>	1 <i>0.1</i>	2 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.1</i>	
Diaphragmatic hernia	31 <i>1.3</i>	4 <i>0.5</i>	30 <i>2.2</i>	7 <i>1.3</i>	0 <i>0.0</i>	75 <i>1.4</i>	
Double outlet right ventricle	10 <i>0.4</i>	19 <i>2.4</i>	19 <i>1.4</i>	5 <i>0.9</i>	0 <i>0.0</i>	57 <i>1.1</i>	
Ebstein anomaly	18 <i>0.8</i>	3 <i>0.4</i>	9 <i>0.7</i>	1 <i>0.2</i>	1 <i>17.7</i>	33 <i>0.6</i>	
Encephalocele	10 <i>0.4</i>	4 <i>0.5</i>	3 <i>0.2</i>	2 <i>0.4</i>	0 <i>0.0</i>	21 <i>0.4</i>	
Esophageal atresia/tracheoesophageal fistula	59 <i>2.5</i>	18 <i>2.3</i>	30 <i>2.2</i>	11 <i>2.0</i>	0 <i>0.0</i>	126 <i>2.4</i>	
Gastroschisis	44 <i>1.9</i>	18 <i>2.3</i>	41 <i>3.0</i>	3 <i>0.5</i>	2 <i>35.5</i>	113 <i>2.2</i>	
Holoprosencephaly	82 <i>3.5</i>	43 <i>5.5</i>	82 <i>6.0</i>	8 <i>1.5</i>	0 <i>0.0</i>	228 <i>4.4</i>	
Hypoplastic left heart syndrome	28 <i>1.2</i>	12 <i>1.5</i>	16 <i>1.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	61 <i>1.2</i>	
Hypospadias*	1148 <i>95.7</i>	265 <i>66.9</i>	378 <i>54.0</i>	159 <i>56.2</i>	4 <i>134.2</i>	2024 <i>75.7</i>	
Interrupted aortic arch	8 <i>0.3</i>	9 <i>1.2</i>	8 <i>0.6</i>	1 <i>0.2</i>	0 <i>0.0</i>	26 <i>0.5</i>	
Limb deficiencies (reduction defects)	97 <i>4.1</i>	48 <i>6.2</i>	66 <i>4.8</i>	13 <i>2.4</i>	0 <i>0.0</i>	238 <i>4.5</i>	

New Jersey
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	18 <i>0.8</i>	14 <i>1.8</i>	13 <i>0.9</i>	4 <i>0.7</i>	0 <i>0.0</i>	50 <i>1.0</i>	
Pulmonary valve atresia and stenosis	157 <i>6.7</i>	84 <i>10.8</i>	121 <i>8.8</i>	27 <i>4.9</i>	1 <i>17.7</i>	413 <i>7.9</i>	
Pulmonary valve atresia	10 <i>0.4</i>	9 <i>1.2</i>	15 <i>1.1</i>	2 <i>0.4</i>	0 <i>0.0</i>	42 <i>0.8</i>	
Rectal and large intestinal atresia/stenosis	67 <i>2.9</i>	24 <i>3.1</i>	53 <i>3.8</i>	19 <i>3.5</i>	1 <i>17.7</i>	174 <i>3.3</i>	
Renal agenesis/hypoplasia	144 <i>6.2</i>	30 <i>3.9</i>	73 <i>5.3</i>	23 <i>4.2</i>	1 <i>17.7</i>	282 <i>5.4</i>	
Single ventricle	5 <i>0.2</i>	4 <i>0.5</i>	2 <i>0.1</i>	3 <i>0.5</i>	0 <i>0.0</i>	14 <i>0.3</i>	
Small intestinal atresia/stenosis	67 <i>2.9</i>	27 <i>3.5</i>	47 <i>3.4</i>	10 <i>1.8</i>	0 <i>0.0</i>	154 <i>2.9</i>	
Spina bifida without anencephalus	44 <i>1.9</i>	21 <i>2.7</i>	46 <i>3.3</i>	8 <i>1.5</i>	0 <i>0.0</i>	128 <i>2.4</i>	
Tetralogy of Fallot	60 <i>2.6</i>	32 <i>4.1</i>	46 <i>3.3</i>	15 <i>2.7</i>	0 <i>0.0</i>	170 <i>3.2</i>	
Total anomalous pulmonary venous connection	6 <i>0.3</i>	7 <i>0.9</i>	20 <i>1.5</i>	2 <i>0.4</i>	0 <i>0.0</i>	35 <i>0.7</i>	
Transposition of the great arteries (TGA)	40 <i>1.7</i>	20 <i>2.6</i>	25 <i>1.8</i>	9 <i>1.6</i>	0 <i>0.0</i>	100 <i>1.9</i>	
Dextro-transposition of great arteries (d-TGA)	26 <i>1.1</i>	13 <i>1.7</i>	14 <i>1.0</i>	7 <i>1.3</i>	0 <i>0.0</i>	62 <i>1.2</i>	
Tricuspid valve atresia and stenosis	194 <i>8.3</i>	116 <i>14.9</i>	188 <i>13.7</i>	24 <i>4.4</i>	0 <i>0.0</i>	529 <i>10.1</i>	
Trisomy 13	4 <i>0.2</i>	6 <i>0.8</i>	7 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>0.4</i>	
Trisomy 18	18 <i>0.8</i>	16 <i>2.1</i>	9 <i>0.7</i>	2 <i>0.4</i>	0 <i>0.0</i>	45 <i>0.9</i>	
Trisomy 21 (Down syndrome)	252 <i>10.8</i>	91 <i>11.7</i>	218 <i>15.8</i>	30 <i>5.5</i>	2 <i>35.5</i>	618 <i>11.8</i>	
Turner syndrome†	10 <i>0.9</i>	2 <i>0.5</i>	4 <i>0.6</i>	1 <i>0.4</i>	0 <i>0.0</i>	18 <i>0.7</i>	
Ventricular septal defect	1271 <i>54.3</i>	426 <i>54.8</i>	843 <i>61.2</i>	237 <i>43.2</i>	2 <i>35.5</i>	2867 <i>54.8</i>	
Total live births §	234055	77784	137697	54916	564	523109	
Male live births	119922	39610	69974	28306	298	267459	
Female live births	114133	38171	67722	26610	266	255646	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

New Jersey**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	106 <i>2.6</i>	4 <i>0.4</i>	113 <i>2.2</i>	
Trisomy 13	13 <i>0.3</i>	6 <i>0.5</i>	19 <i>0.4</i>	
Trisomy 18	20 <i>0.5</i>	24 <i>2.1</i>	45 <i>0.9</i>	
Trisomy 21 (Down syndrome)	267 <i>6.5</i>	322 <i>28.8</i>	618 <i>11.8</i>	
Total live births	411148	111868	523109	

**Total includes unknown maternal age

New Mexico**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	9 <i>2.5</i>	0 <i>0.0</i>	19 <i>2.7</i>	1 <i>3.9</i>	4 <i>2.4</i>	35 <i>2.7</i>	
Cleft lip alone	5 <i>1.4</i>	0 <i>0.0</i>	26 <i>3.6</i>	0 <i>0.0</i>	6 <i>3.6</i>	39 <i>3.0</i>	
Cleft lip with cleft palate	20 <i>5.5</i>	1 <i>4.4</i>	49 <i>6.9</i>	0 <i>0.0</i>	17 <i>10.2</i>	88 <i>6.8</i>	
Cleft palate alone	32 <i>8.9</i>	3 <i>13.2</i>	50 <i>7.0</i>	2 <i>7.7</i>	13 <i>7.8</i>	101 <i>7.8</i>	
Common truncus (truncus arteriosus)	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.1</i>	
Gastroschisis	12 <i>3.3</i>	2 <i>8.8</i>	54 <i>7.6</i>	2 <i>7.7</i>	10 <i>6.0</i>	82 <i>6.3</i>	
Hypoplastic left heart syndrome	6 <i>1.7</i>	0 <i>0.0</i>	9 <i>1.3</i>	0 <i>0.0</i>	4 <i>2.4</i>	20 <i>1.5</i>	
Hypospadias*	129 <i>69.3</i>	10 <i>87.4</i>	125 <i>34.5</i>	4 <i>30.6</i>	13 <i>15.5</i>	286 <i>43.1</i>	
Limb deficiencies (reduction defects)	26 <i>7.2</i>	1 <i>4.4</i>	54 <i>7.6</i>	2 <i>7.7</i>	9 <i>5.4</i>	96 <i>7.4</i>	
Renal agenesis/hypoplasia	2 <i>0.6</i>	0 <i>0.0</i>	13 <i>1.8</i>	0 <i>0.0</i>	2 <i>1.2</i>	17 <i>1.3</i>	
Spina bifida without anencephalus	26 <i>7.2</i>	1 <i>4.4</i>	46 <i>6.5</i>	0 <i>0.0</i>	12 <i>7.2</i>	85 <i>6.5</i>	
Tetralogy of Fallot	8 <i>2.2</i>	1 <i>4.4</i>	18 <i>2.5</i>	3 <i>11.6</i>	6 <i>3.6</i>	36 <i>2.8</i>	
Transposition of the great arteries (TGA)	3 <i>0.8</i>	2 <i>8.8</i>	11 <i>1.5</i>	0 <i>0.0</i>	3 <i>1.8</i>	19 <i>1.5</i>	
Trisomy 13	4 <i>1.1</i>	2 <i>8.8</i>	9 <i>1.3</i>	1 <i>3.9</i>	2 <i>1.2</i>	26 <i>2.0</i>	
Trisomy 18	5 <i>1.4</i>	3 <i>13.2</i>	9 <i>1.3</i>	1 <i>3.9</i>	4 <i>2.4</i>	47 <i>3.6</i>	
Trisomy 21 (Down syndrome)	43 <i>11.9</i>	3 <i>13.2</i>	91 <i>12.8</i>	1 <i>3.9</i>	17 <i>10.2</i>	172 <i>13.2</i>	
Total live births	36152	2268	71317	2597	16646	130274	
Male live births	18616	1144	36200	1306	8404	66334	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

New Mexico**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	80 <i>6.9</i>	1 <i>0.7</i>	82 <i>6.3</i>	
Trisomy 13	14 <i>1.2</i>	4 <i>2.9</i>	26 <i>2.0</i>	
Trisomy 18	16 <i>1.4</i>	6 <i>4.3</i>	47 <i>3.6</i>	
Trisomy 21 (Down syndrome)	98 <i>8.4</i>	61 <i>43.5</i>	172 <i>13.2</i>	
Total live births	116248	14026	130274	

**Total includes unknown maternal age

General comments

-Unspecified non-livebirths include terminations plus spontaneous abortions.

New York
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	15 <i>0.2</i>	5 <i>0.3</i>	10 <i>0.3</i>	3 <i>0.2</i>	0 <i>0.0</i>	34 <i>0.3</i>	
Anophthalmia/microphthalmia	52 <i>0.9</i>	23 <i>1.2</i>	36 <i>1.3</i>	12 <i>1.0</i>	0 <i>0.0</i>	123 <i>1.0</i>	
Anotia/microtia	60 <i>1.0</i>	17 <i>0.9</i>	64 <i>2.2</i>	30 <i>2.4</i>	2 <i>9.2</i>	174 <i>1.4</i>	
Aortic valve stenosis	111 <i>1.8</i>	16 <i>0.8</i>	41 <i>1.4</i>	15 <i>1.2</i>	0 <i>0.0</i>	186 <i>1.5</i>	
Atrial septal defect	2368 <i>38.7</i>	1732 <i>89.0</i>	1803 <i>62.9</i>	808 <i>65.2</i>	6 <i>27.5</i>	6816 <i>55.5</i>	
Atrioventricular septal defect (Endocardial cushion defect)	245 <i>4.0</i>	120 <i>6.2</i>	123 <i>4.3</i>	51 <i>4.1</i>	2 <i>9.2</i>	548 <i>4.5</i>	
Biliary atresia	53 <i>0.9</i>	39 <i>2.0</i>	26 <i>0.9</i>	24 <i>1.9</i>	1 <i>4.6</i>	145 <i>1.2</i>	
Bladder exstrophy	15 <i>0.2</i>	1 <i>0.1</i>	4 <i>0.1</i>	1 <i>0.1</i>	0 <i>0.0</i>	21 <i>0.2</i>	
Choanal atresia	121 <i>2.0</i>	34 <i>1.7</i>	47 <i>1.6</i>	12 <i>1.0</i>	0 <i>0.0</i>	215 <i>1.8</i>	
Cleft lip alone	167 <i>2.7</i>	27 <i>1.4</i>	46 <i>1.6</i>	30 <i>2.4</i>	1 <i>4.6</i>	277 <i>2.3</i>	
Cleft lip with cleft palate	299 <i>4.9</i>	67 <i>3.4</i>	133 <i>4.6</i>	69 <i>5.6</i>	4 <i>18.3</i>	578 <i>4.7</i>	
Cleft palate alone	374 <i>6.1</i>	80 <i>4.1</i>	135 <i>4.7</i>	97 <i>7.8</i>	1 <i>4.6</i>	695 <i>5.7</i>	
Cloacal exstrophy	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Clubfoot	934 <i>15.3</i>	276 <i>14.2</i>	366 <i>12.8</i>	182 <i>14.7</i>	3 <i>13.7</i>	1777 <i>14.5</i>	
Coarctation of the aorta	331 <i>5.4</i>	82 <i>4.2</i>	147 <i>5.1</i>	69 <i>5.6</i>	2 <i>9.2</i>	638 <i>5.2</i>	
Common truncus (truncus arteriosus)	36 <i>0.6</i>	11 <i>0.6</i>	11 <i>0.4</i>	9 <i>0.7</i>	0 <i>0.0</i>	68 <i>0.6</i>	
Congenital cataract	113 <i>1.8</i>	39 <i>2.0</i>	65 <i>2.3</i>	25 <i>2.0</i>	0 <i>0.0</i>	246 <i>2.0</i>	
Congenital posterior urethral valves	54 <i>0.9</i>	47 <i>2.4</i>	25 <i>0.9</i>	14 <i>1.1</i>	0 <i>0.0</i>	141 <i>1.1</i>	
Craniosynostosis	378 <i>6.2</i>	53 <i>2.7</i>	137 <i>4.8</i>	40 <i>3.2</i>	2 <i>9.2</i>	620 <i>5.0</i>	
Deletion 22q11.2	21 <i>0.3</i>	6 <i>0.3</i>	7 <i>0.2</i>	2 <i>0.2</i>	0 <i>0.0</i>	38 <i>0.3</i>	
Diaphragmatic hernia	144 <i>2.4</i>	43 <i>2.2</i>	56 <i>2.0</i>	36 <i>2.9</i>	0 <i>0.0</i>	286 <i>2.3</i>	
Double outlet right ventricle	88 <i>1.4</i>	49 <i>2.5</i>	64 <i>2.2</i>	43 <i>3.5</i>	0 <i>0.0</i>	250 <i>2.0</i>	
Ebstein anomaly	34 <i>0.6</i>	14 <i>0.7</i>	27 <i>0.9</i>	8 <i>0.6</i>	0 <i>0.0</i>	85 <i>0.7</i>	
Encephalocele	35 <i>0.6</i>	20 <i>1.0</i>	18 <i>0.6</i>	10 <i>0.8</i>	0 <i>0.0</i>	85 <i>0.7</i>	
Esophageal atresia/tracheoesophageal fistula	139 <i>2.3</i>	33 <i>1.7</i>	61 <i>2.1</i>	23 <i>1.9</i>	0 <i>0.0</i>	264 <i>2.1</i>	
Gastroschisis	159 <i>2.6</i>	44 <i>2.3</i>	65 <i>2.3</i>	13 <i>1.0</i>	0 <i>0.0</i>	286 <i>2.3</i>	
Holoprosencephaly	36 <i>0.6</i>	14 <i>0.7</i>	19 <i>0.7</i>	1 <i>0.1</i>	0 <i>0.0</i>	71 <i>0.6</i>	
Hypoplastic left heart syndrome	146 <i>2.4</i>	53 <i>2.7</i>	68 <i>2.4</i>	24 <i>1.9</i>	1 <i>4.6</i>	294 <i>2.4</i>	
Hypospadias*	2906 <i>92.5</i>	749 <i>75.6</i>	695 <i>47.7</i>	364 <i>56.8</i>	7 <i>63.8</i>	4770 <i>75.8</i>	
Interrupted aortic arch	49 <i>0.8</i>	15 <i>0.8</i>	26 <i>0.9</i>	8 <i>0.6</i>	0 <i>0.0</i>	98 <i>0.8</i>	

New York**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	185 <i>3.0</i>	68 <i>3.5</i>	77 <i>2.7</i>	24 <i>1.9</i>	0 <i>0.0</i>	357 <i>2.9</i>	
Omphalocele	88 <i>1.4</i>	23 <i>1.2</i>	26 <i>0.9</i>	10 <i>0.8</i>	2 <i>9.2</i>	150 <i>1.2</i>	
Pulmonary valve atresia and stenosis	454 <i>7.4</i>	196 <i>10.1</i>	223 <i>7.8</i>	113 <i>9.1</i>	1 <i>4.6</i>	1001 <i>8.1</i>	
Pulmonary valve atresia	51 <i>0.8</i>	17 <i>0.9</i>	28 <i>1.0</i>	20 <i>1.6</i>	0 <i>0.0</i>	118 <i>1.0</i>	
Rectal and large intestinal atresia/stenosis	219 <i>3.6</i>	66 <i>3.4</i>	108 <i>3.8</i>	65 <i>5.2</i>	1 <i>4.6</i>	468 <i>3.8</i>	
Renal agenesis/hypoplasia	322 <i>5.3</i>	74 <i>3.8</i>	128 <i>4.5</i>	58 <i>4.7</i>	1 <i>4.6</i>	593 <i>4.8</i>	
Single ventricle	45 <i>0.7</i>	13 <i>0.7</i>	24 <i>0.8</i>	14 <i>1.1</i>	0 <i>0.0</i>	98 <i>0.8</i>	
Small intestinal atresia/stenosis	242 <i>4.0</i>	108 <i>5.5</i>	101 <i>3.5</i>	59 <i>4.8</i>	1 <i>4.6</i>	517 <i>4.2</i>	
Spina bifida without anencephalus	152 <i>2.5</i>	37 <i>1.9</i>	72 <i>2.5</i>	21 <i>1.7</i>	2 <i>9.2</i>	288 <i>2.3</i>	
Tetralogy of Fallot	292 <i>4.8</i>	100 <i>5.1</i>	128 <i>4.5</i>	115 <i>9.3</i>	1 <i>4.6</i>	646 <i>5.3</i>	
Total anomalous pulmonary venous connection	55 <i>0.9</i>	26 <i>1.3</i>	43 <i>1.5</i>	25 <i>2.0</i>	0 <i>0.0</i>	150 <i>1.2</i>	
Transposition of the great arteries (TGA)	180 <i>2.9</i>	28 <i>1.4</i>	66 <i>2.3</i>	42 <i>3.4</i>	0 <i>0.0</i>	322 <i>2.6</i>	
Dextro-transposition of great arteries (d-TGA)	172 <i>2.8</i>	28 <i>1.4</i>	66 <i>2.3</i>	40 <i>3.2</i>	0 <i>0.0</i>	312 <i>2.5</i>	
Tricuspid valve atresia and stenosis	77 <i>1.3</i>	31 <i>1.6</i>	38 <i>1.3</i>	25 <i>2.0</i>	0 <i>0.0</i>	177 <i>1.4</i>	
Tricuspid valve atresia	56 <i>0.9</i>	14 <i>0.7</i>	16 <i>0.6</i>	15 <i>1.2</i>	0 <i>0.0</i>	102 <i>0.8</i>	
Trisomy 13	23 <i>0.4</i>	23 <i>1.2</i>	15 <i>0.5</i>	9 <i>0.7</i>	0 <i>0.0</i>	71 <i>0.6</i>	
Trisomy 18	56 <i>0.9</i>	38 <i>2.0</i>	38 <i>1.3</i>	14 <i>1.1</i>	0 <i>0.0</i>	146 <i>1.2</i>	
Trisomy 21 (Down syndrome)	701 <i>11.5</i>	261 <i>13.4</i>	380 <i>13.3</i>	153 <i>12.3</i>	2 <i>9.2</i>	1518 <i>12.4</i>	
Turner syndrome†	49 <i>1.6</i>	13 <i>1.4</i>	20 <i>1.4</i>	9 <i>1.5</i>	0 <i>0.0</i>	93 <i>1.6</i>	
Ventricular septal defect	2868 <i>46.9</i>	856 <i>44.0</i>	1301 <i>45.4</i>	687 <i>55.4</i>	10 <i>45.8</i>	5799 <i>47.2</i>	
Total live births §	611097	194618	286642	124002	2185	1228354	
Male live births	314058	99012	145775	64062	1097	629099	
Female live births	297030	95606	140866	59939	1088	599244	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

New York**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	277 <i>2.8</i>	9 <i>0.4</i>	286 <i>2.3</i>	
Trisomy 13	45 <i>0.5</i>	26 <i>1.0</i>	71 <i>0.6</i>	
Trisomy 18	79 <i>0.8</i>	67 <i>2.7</i>	146 <i>1.2</i>	
Trisomy 21 (Down syndrome)	736 <i>7.5</i>	782 <i>31.1</i>	1518 <i>12.4</i>	
Total live births	977100	251179	1228354	

**Total includes unknown maternal age

North Carolina
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	92 2.7	26 1.8	35 3.8	4 1.9	4 4.7	182 3.0	
Anophthalmia/microphthalmia	59 1.7	24 1.7	20 2.2	4 1.9	1 1.2	110 1.8	
Anotia/microtia	45 1.3	13 0.9	42 4.5	3 1.4	6 7.1	110 1.8	
Aortic valve stenosis	90 2.7	28 1.9	16 1.7	2 0.9	1 1.2	137 2.3	
Atrial septal defect	1828 53.8	957 66.0	483 52.2	88 41.1	70 83.1	3439 56.5	
Atrioventricular septal defect (Endocardial cushion defect)	225 6.6	100 6.9	57 6.2	11 5.1	7 8.3	408 6.7	
Biliary atresia	19 0.6	10 0.7	4 0.4	1 0.5	0 0.0	34 0.6	
Bladder exstrophy	10 0.3	7 0.5	3 0.3	0 0.0	0 0.0	20 0.3	
Choanal atresia	46 1.4	15 1.0	17 1.8	3 1.4	1 1.2	82 1.3	
Cleft lip alone	122 3.6	50 3.5	23 2.5	5 2.3	5 5.9	208 3.4	
Cleft lip with cleft palate	212 6.2	55 3.8	60 6.5	13 6.1	8 9.5	350 5.8	
Cleft palate alone	263 7.7	51 3.5	35 3.8	10 4.7	6 7.1	367 6.0	
Cloacal exstrophy	11 0.3	7 0.5	5 0.5	0 0.0	0 0.0	23 0.4	
Clubfoot	694 20.4	274 18.9	173 18.7	28 13.1	15 17.8	1197 19.7	
Coarctation of the aorta	192 5.7	57 3.9	35 3.8	8 3.7	1 1.2	294 4.8	
Common truncus (truncus arteriosus)	22 0.6	8 0.6	7 0.8	3 1.4	0 0.0	41 0.7	
Congenital cataract	25 0.7	21 1.4	9 1.0	2 0.9	0 0.0	57 0.9	
Congenital posterior urethral valves	84 2.5	44 3.0	16 1.7	2 0.9	3 3.6	150 2.5	
Craniosynostosis	270 8.0	47 3.2	46 5.0	8 3.7	5 5.9	377 6.2	
Diaphragmatic hernia	108 3.2	31 2.1	28 3.0	6 2.8	3 3.6	180 3.0	
Double outlet right ventricle	58 1.7	25 1.7	12 1.3	0 0.0	2 2.4	98 1.6	
Ebstein anomaly	26 0.8	9 0.6	5 0.5	2 0.9	1 1.2	43 0.7	
Encephalocele	31 0.9	20 1.4	14 1.5	0 0.0	2 2.4	74 1.2	
Esophageal atresia/tracheoesophageal fistula	104 3.1	32 2.2	20 2.2	1 0.5	1 1.2	158 2.6	
Gastroschisis	177 5.2	59 4.1	32 3.5	3 1.4	7 8.3	280 4.6	
Holoprosencephaly	36 1.1	23 1.6	22 2.4	3 1.4	2 2.4	89 1.5	
Hypoplastic left heart syndrome	87 2.6	32 2.2	24 2.6	4 1.9	0 0.0	149 2.4	
Hypospadias*	1128 64.8	379 51.6	112 23.8	60 54.2	30 70.0	1711 55.1	
Interrupted aortic arch	18 0.5	16 1.1	7 0.8	3 1.4	0 0.0	44 0.7	
Limb deficiencies (reduction defects)	165 4.9	80 5.5	40 4.3	6 2.8	7 8.3	304 5.0	

North Carolina**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	70 <i>2.1</i>	53 <i>3.7</i>	23 <i>2.5</i>	8 <i>3.7</i>	2 <i>2.4</i>	162 <i>2.7</i>	
Pulmonary valve atresia and stenosis	257 <i>7.6</i>	138 <i>9.5</i>	63 <i>6.8</i>	15 <i>7.0</i>	11 <i>13.1</i>	488 <i>8.0</i>	
Pulmonary valve atresia	50 <i>1.5</i>	32 <i>2.2</i>	8 <i>0.9</i>	6 <i>2.8</i>	2 <i>2.4</i>	99 <i>1.6</i>	
Rectal and large intestinal atresia/stenosis	144 <i>4.2</i>	53 <i>3.7</i>	48 <i>5.2</i>	8 <i>3.7</i>	5 <i>5.9</i>	260 <i>4.3</i>	
Renal agenesis/hypoplasia	221 <i>6.5</i>	79 <i>5.5</i>	52 <i>5.6</i>	4 <i>1.9</i>	5 <i>5.9</i>	368 <i>6.1</i>	
Single ventricle	30 <i>0.9</i>	14 <i>1.0</i>	13 <i>1.4</i>	2 <i>0.9</i>	0 <i>0.0</i>	59 <i>1.0</i>	
Small intestinal atresia/stenosis	95 <i>2.8</i>	46 <i>3.2</i>	37 <i>4.0</i>	9 <i>4.2</i>	3 <i>3.6</i>	190 <i>3.1</i>	
Spina bifida without anencephalus	146 <i>4.3</i>	43 <i>3.0</i>	44 <i>4.8</i>	5 <i>2.3</i>	3 <i>3.6</i>	248 <i>4.1</i>	
Tetralogy of Fallot	143 <i>4.2</i>	70 <i>4.8</i>	33 <i>3.6</i>	12 <i>5.6</i>	6 <i>7.1</i>	266 <i>4.4</i>	
Total anomalous pulmonary venous connection	36 <i>1.1</i>	15 <i>1.0</i>	18 <i>1.9</i>	3 <i>1.4</i>	1 <i>1.2</i>	73 <i>1.2</i>	
Transposition of the great arteries (TGA)	118 <i>3.5</i>	43 <i>3.0</i>	21 <i>2.3</i>	6 <i>2.8</i>	5 <i>5.9</i>	195 <i>3.2</i>	
Dextro-transposition of great arteries (d-TGA)	85 <i>2.5</i>	21 <i>1.4</i>	12 <i>1.3</i>	6 <i>2.8</i>	5 <i>5.9</i>	130 <i>2.1</i>	
Tricuspid valve atresia and stenosis	78 <i>2.3</i>	54 <i>3.7</i>	22 <i>2.4</i>	4 <i>1.9</i>	6 <i>7.1</i>	165 <i>2.7</i>	
Tricuspid valve atresia	68 <i>2.0</i>	48 <i>3.3</i>	18 <i>1.9</i>	4 <i>1.9</i>	6 <i>7.1</i>	145 <i>2.4</i>	
Trisomy 13	32 <i>0.9</i>	31 <i>2.1</i>	17 <i>1.8</i>	3 <i>1.4</i>	1 <i>1.2</i>	88 <i>1.4</i>	
Trisomy 18	111 <i>3.3</i>	50 <i>3.5</i>	35 <i>3.8</i>	5 <i>2.3</i>	1 <i>1.2</i>	210 <i>3.5</i>	
Trisomy 21 (Down syndrome)	443 <i>13.0</i>	127 <i>8.8</i>	144 <i>15.6</i>	26 <i>12.2</i>	14 <i>16.6</i>	775 <i>12.7</i>	
Turner syndrome†	40 <i>2.4</i>	7 <i>1.0</i>	9 <i>2.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	60 <i>2.0</i>	
Ventricular septal defect	1512 <i>44.5</i>	593 <i>40.9</i>	479 <i>51.8</i>	76 <i>35.5</i>	32 <i>38.0</i>	2703 <i>44.4</i>	
Total live births §	339507	144892	92560	21395	8422	608240	
Male live births	174045	73397	47093	11078	4288	310658	
Female live births	165460	71494	45463	10317	4134	297575	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

North Carolina**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	270 <i>5.1</i>	9 <i>1.1</i>	280 <i>4.6</i>	
Trisomy 13	58 <i>1.1</i>	30 <i>3.7</i>	88 <i>1.4</i>	
Trisomy 18	117 <i>2.2</i>	91 <i>11.3</i>	210 <i>3.5</i>	
Trisomy 21 (Down syndrome)	406 <i>7.7</i>	366 <i>45.3</i>	775 <i>12.7</i>	
Total live births	527334	80875	608240	

**Total includes unknown maternal age

General comments

-Fetal deaths are defined as deaths at 20 or more weeks gestation.

-Terminations are defined as termination of pregnancy before 20 weeks gestation and do not include intra-uterine fetal death before 20 weeks.

North Dakota
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	19 <i>4.9</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>6.7</i>	23 <i>4.8</i>	
Anophthalmia/microphthalmia	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>13.3</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Anotia/microtia	5 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	6 <i>1.3</i>	
Aortic valve stenosis	6 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>4.4</i>	8 <i>1.7</i>	
Atrial septal defect	335 <i>86.3</i>	24 <i>226.8</i>	0 <i>0.0</i>	6 <i>79.9</i>	110 <i>244.2</i>	491 <i>102.4</i>	
Atrioventricular septal defect (Endocardial cushion defect)	19 <i>4.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>13.3</i>	1 <i>2.2</i>	21 <i>4.4</i>	
Biliary atresia	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.4</i>	
Bladder exstrophy	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Choanal atresia	3 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.6</i>	
Cleft lip alone	47 <i>12.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>26.6</i>	10 <i>22.2</i>	62 <i>12.9</i>	
Cleft lip with cleft palate	29 <i>7.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>39.9</i>	19 <i>42.2</i>	51 <i>10.6</i>	
Cleft palate alone	62 <i>16.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>39.9</i>	14 <i>31.1</i>	80 <i>16.7</i>	
Cloacal exstrophy	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.2</i>	1
Coarctation of the aorta	15 <i>3.9</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>4.4</i>	18 <i>3.8</i>	
Common truncus (truncus arteriosus)	5 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	6 <i>1.3</i>	
Congenital cataract	5 <i>1.3</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>1.5</i>	
Diaphragmatic hernia	13 <i>3.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>6.7</i>	16 <i>3.3</i>	
Double outlet right ventricle	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.4</i>	
Ebstein anomaly	6 <i>1.5</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>1.5</i>	
Encephalocele	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	3 <i>0.6</i>	
Esophageal atresia/tracheoesophageal fistula	7 <i>1.8</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>1.7</i>	
Gastroschisis	14 <i>3.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>20.0</i>	23 <i>4.8</i>	
Holoprosencephaly	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	2 <i>0.4</i>	1
Hypoplastic left heart syndrome	12 <i>3.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	15 <i>3.1</i>	
Hypospadias*	67 <i>33.9</i>	3 <i>52.4</i>	0 <i>0.0</i>	1 <i>25.3</i>	7 <i>30.3</i>	80 <i>32.7</i>	
Limb deficiencies (reduction defects)	6 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>6.7</i>	9 <i>1.9</i>	
Omphalocele	5 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	6 <i>1.3</i>	
Pulmonary valve atresia and stenosis	53 <i>13.7</i>	4 <i>37.8</i>	0 <i>0.0</i>	1 <i>13.3</i>	15 <i>33.3</i>	80 <i>16.7</i>	
Pulmonary valve atresia	5 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>4.4</i>	9 <i>1.9</i>	
Rectal and large intestinal atresia/stenosis	9 <i>2.3</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>2.3</i>	

North Dakota**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Renal agenesis/hypoplasia	4 <i>1.0</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>15.5</i>	12 <i>2.5</i>	
Single ventricle	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	2 <i>0.4</i>	
Small intestinal atresia/stenosis	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Spina bifida without anencephalus	19 <i>4.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>11.1</i>	30 <i>6.3</i>	
Tetralogy of Fallot	12 <i>3.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>8.9</i>	17 <i>3.5</i>	
Total anomalous pulmonary venous connection	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	1 <i>0.2</i>	
Transposition of the great arteries (TGA)	10 <i>2.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>4.4</i>	13 <i>2.7</i>	
Dextro-transposition of great arteries (d-TGA)	6 <i>1.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>4.4</i>	9 <i>1.9</i>	
Tricuspid valve atresia and stenosis	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	4 <i>0.8</i>	
Tricuspid valve atresia	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.2</i>	4 <i>0.8</i>	
Trisomy 13	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Trisomy 18	3 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>6.7</i>	6 <i>1.3</i>	
Trisomy 21 (Down syndrome)	43 <i>11.1</i>	1 <i>9.5</i>	0 <i>0.0</i>	2 <i>26.6</i>	3 <i>6.7</i>	53 <i>11.1</i>	
Turner syndrome†	1 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>28.2</i>	0 <i>0.0</i>	2 <i>0.9</i>	
Ventricular septal defect	131 <i>33.7</i>	5 <i>47.3</i>	0 <i>0.0</i>	3 <i>39.9</i>	38 <i>84.4</i>	187 <i>39.0</i>	2
Total live births §	38816	1058	1720	751	4504	47959	
Male live births	19749	573	880	396	2313	24452	
Female live births	19066	485	840	355	2189	23504	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

North Dakota**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	20 <i>4.7</i>	0 <i>0.0</i>	23 <i>4.8</i>	
Trisomy 13	1 <i>0.2</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Trisomy 18	5 <i>1.2</i>	0 <i>0.0</i>	6 <i>1.3</i>	
Trisomy 21 (Down syndrome)	30 <i>7.0</i>	23 <i>48.6</i>	53 <i>11.1</i>	
Total live births	42939	4737	47959	

**Total includes unknown maternal age

Notes

- 1.Data for this condition begin in 2013.
- 2.Data for this condition exclude inlet ventricular septal defect and common atrioventricular canal type ventricular septal defect.

General comments

-Fetal Death reporting not required before 20 weeks gestation. North Dakota does not differentiate between fetal deaths and terminations.

Oklahoma
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	38 2.3	4 1.6	9 2.3	0 0.0	7 2.4	58 2.2	
Anophthalmia/microphthalmia	22 1.3	0 0.0	4 1.0	1 1.4	6 2.1	33 1.2	
Anotia/microtia	28 1.7	2 0.8	14 3.6	3 4.3	3 1.0	50 1.9	
Aortic valve stenosis	62 3.7	3 1.2	14 3.6	0 0.0	4 1.4	83 3.1	
Atrial septal defect	1091 65.6	164 67.3	185 47.0	21 30.0	183 63.5	1655 62.2	
Atrioventricular septal defect (Endocardial cushion defect)	87 5.2	20 8.2	21 5.3	2 2.9	10 3.5	141 5.3	
Biliary atresia	11 0.7	3 1.2	2 0.5	0 0.0	4 1.4	20 0.8	
Bladder exstrophy	5 0.3	1 0.4	0 0.0	0 0.0	2 0.7	8 0.3	
Choanal atresia	27 1.6	5 2.1	4 1.0	0 0.0	2 0.7	38 1.4	
Cleft lip alone	73 4.4	8 3.3	11 2.8	2 2.9	11 3.8	107 4.0	
Cleft lip with cleft palate	143 8.6	10 4.1	26 6.6	3 4.3	26 9.0	213 8.0	
Cleft palate alone	137 8.2	14 5.7	25 6.4	9 12.8	20 6.9	209 7.9	
Clubfoot	313 18.8	25 10.3	66 16.8	5 7.1	52 18.0	472 17.7	
Coarctation of the aorta	87 5.2	11 4.5	17 4.3	1 1.4	16 5.6	133 5.0	
Common truncus (truncus arteriosus)	7 0.4	4 1.6	1 0.3	0 0.0	3 1.0	18 0.7	
Congenital cataract	25 1.5	3 1.2	3 0.8	1 1.4	2 0.7	35 1.3	
Congenital posterior urethral valves	21 1.3	5 2.1	1 0.3	0 0.0	2 0.7	30 1.1	
Craniosynostosis	55 3.3	4 1.6	8 2.0	2 2.9	9 3.1	82 3.1	
Deletion 22q11.2	16 1.0	3 1.2	2 0.5	0 0.0	5 1.7	26 1.0	
Diaphragmatic hernia	58 3.5	4 1.6	21 5.3	2 2.9	10 3.5	96 3.6	
Double outlet right ventricle	32 1.9	9 3.7	5 1.3	2 2.9	9 3.1	57 2.1	
Ebstein anomaly	13 0.8	0 0.0	6 1.5	1 1.4	0 0.0	21 0.8	
Encephalocele	13 0.8	6 2.5	3 0.8	0 0.0	6 2.1	28 1.1	
Esophageal atresia/tracheoesophageal fistula	44 2.6	3 1.2	9 2.3	1 1.4	9 3.1	66 2.5	
Gastroschisis	91 5.5	9 3.7	18 4.6	3 4.3	18 6.2	139 5.2	
Holoprosencephaly	19 1.1	2 0.8	6 1.5	0 0.0	5 1.7	32 1.2	
Hypoplastic left heart syndrome	42 2.5	1 0.4	11 2.8	1 1.4	6 2.1	62 2.3	
Hypospadias*	342 39.9	47 38.0	17 8.5	7 19.8	43 29.4	461 33.8	
Interrupted aortic arch	14 0.8	3 1.2	3 0.8	0 0.0	3 1.0	23 0.9	
Limb deficiencies (reduction defects)	85 5.1	12 4.9	14 3.6	1 1.4	12 4.2	125 4.7	

Oklahoma**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	37 <i>2.2</i>	9 <i>3.7</i>	9 <i>2.3</i>	0 <i>0.0</i>	4 <i>1.4</i>	59 <i>2.2</i>	
Pulmonary valve atresia and stenosis	153 <i>9.2</i>	21 <i>8.6</i>	26 <i>6.6</i>	5 <i>7.1</i>	13 <i>4.5</i>	222 <i>8.3</i>	
Pulmonary valve atresia	19 <i>1.1</i>	4 <i>1.6</i>	4 <i>1.0</i>	2 <i>2.9</i>	4 <i>1.4</i>	34 <i>1.3</i>	
Rectal and large intestinal atresia/stenosis	99 <i>5.9</i>	11 <i>4.5</i>	25 <i>6.4</i>	5 <i>7.1</i>	13 <i>4.5</i>	156 <i>5.9</i>	
Renal agenesis/hypoplasia	102 <i>6.1</i>	8 <i>3.3</i>	16 <i>4.1</i>	1 <i>1.4</i>	13 <i>4.5</i>	142 <i>5.3</i>	
Single ventricle	7 <i>0.4</i>	1 <i>0.4</i>	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.5</i>	
Small intestinal atresia/stenosis	74 <i>4.4</i>	9 <i>3.7</i>	11 <i>2.8</i>	0 <i>0.0</i>	9 <i>3.1</i>	105 <i>3.9</i>	
Spina bifida without anencephalus	56 <i>3.4</i>	5 <i>2.1</i>	13 <i>3.3</i>	0 <i>0.0</i>	9 <i>3.1</i>	85 <i>3.2</i>	
Tetralogy of Fallot	77 <i>4.6</i>	10 <i>4.1</i>	10 <i>2.5</i>	5 <i>7.1</i>	13 <i>4.5</i>	116 <i>4.4</i>	
Total anomalous pulmonary venous connection	21 <i>1.3</i>	2 <i>0.8</i>	6 <i>1.5</i>	1 <i>1.4</i>	5 <i>1.7</i>	35 <i>1.3</i>	
Transposition of the great arteries (TGA)	56 <i>3.4</i>	8 <i>3.3</i>	14 <i>3.6</i>	1 <i>1.4</i>	10 <i>3.5</i>	94 <i>3.5</i>	
Dextro-transposition of great arteries (d-TGA)	45 <i>2.7</i>	8 <i>3.3</i>	11 <i>2.8</i>	1 <i>1.4</i>	8 <i>2.8</i>	76 <i>2.9</i>	
Tricuspid valve atresia and stenosis	18 <i>1.1</i>	3 <i>1.2</i>	4 <i>1.0</i>	1 <i>1.4</i>	2 <i>0.7</i>	29 <i>1.1</i>	
Tricuspid valve atresia	11 <i>0.7</i>	2 <i>0.8</i>	2 <i>0.5</i>	0 <i>0.0</i>	1 <i>0.3</i>	17 <i>0.6</i>	
Trisomy 13	13 <i>0.8</i>	4 <i>1.6</i>	4 <i>1.0</i>	0 <i>0.0</i>	2 <i>0.7</i>	24 <i>0.9</i>	
Trisomy 18	34 <i>2.0</i>	9 <i>3.7</i>	5 <i>1.3</i>	2 <i>2.9</i>	7 <i>2.4</i>	57 <i>2.1</i>	
Trisomy 21 (Down syndrome)	202 <i>12.1</i>	24 <i>9.8</i>	74 <i>18.8</i>	8 <i>11.4</i>	26 <i>9.0</i>	341 <i>12.8</i>	
Turner syndrome†	23 <i>2.8</i>	2 <i>1.7</i>	5 <i>2.6</i>	0 <i>0.0</i>	2 <i>1.4</i>	33 <i>2.5</i>	
Ventricular septal defect	1015 <i>61.0</i>	132 <i>54.2</i>	205 <i>52.1</i>	33 <i>47.1</i>	140 <i>48.6</i>	1551 <i>58.3</i>	
Total live births §	166435	24372	39331	7009	28819	266089	
Male live births	85645	12367	20116	3535	14622	136352	
Female live births	80787	12005	19214	3474	14197	129733	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Oklahoma**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	136 <i>5.6</i>	3 <i>1.3</i>	139 <i>5.2</i>	
Trisomy 13	18 <i>0.7</i>	6 <i>2.6</i>	24 <i>0.9</i>	
Trisomy 18	35 <i>1.4</i>	22 <i>9.5</i>	57 <i>2.1</i>	
Trisomy 21 (Down syndrome)	194 <i>8.0</i>	141 <i>60.9</i>	341 <i>12.8</i>	
Total live births	242846	23162	266089	

**Total includes unknown maternal age

General comments

-Fetal deaths defined as baby born dead (without a heart rate), at or after 20th gestational week. This includes babies that died during labor.

-Terminations defined as fetus terminated by parental choice prior to 37 weeks. When labor is induced to deliver a fetus who is dead prior to the onset of labor it is not considered an elective termination.

Oregon**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	14 <i>0.9</i>	2 <i>4.3</i>	7 <i>1.6</i>	2 <i>1.9</i>	0 <i>0.0</i>	26 <i>1.1</i>	
Cleft lip alone	48 <i>3.1</i>	0 <i>0.0</i>	12 <i>2.7</i>	2 <i>1.9</i>	0 <i>0.0</i>	64 <i>2.8</i>	
Cleft lip with cleft palate	142 <i>9.1</i>	6 <i>12.9</i>	41 <i>9.2</i>	11 <i>10.4</i>	6 <i>21.9</i>	214 <i>9.4</i>	
Cleft palate alone	155 <i>10.0</i>	3 <i>6.5</i>	47 <i>10.5</i>	7 <i>6.6</i>	4 <i>14.6</i>	221 <i>9.7</i>	
Gastroschisis	67 <i>4.3</i>	3 <i>6.5</i>	26 <i>5.8</i>	6 <i>5.7</i>	1 <i>3.7</i>	114 <i>5.0</i>	
Hypoplastic left heart syndrome	61 <i>3.9</i>	2 <i>4.3</i>	28 <i>6.3</i>	3 <i>2.8</i>	1 <i>3.7</i>	97 <i>4.3</i>	
Hypospadias*	754 <i>94.2</i>	36 <i>154.2</i>	134 <i>59.0</i>	28 <i>51.6</i>	9 <i>63.5</i>	994 <i>85.0</i>	
Limb deficiencies (reduction defects)	117 <i>7.5</i>	3 <i>6.5</i>	35 <i>7.8</i>	3 <i>2.8</i>	3 <i>11.0</i>	174 <i>7.6</i>	
Spina bifida without anencephalus	133 <i>8.5</i>	4 <i>8.6</i>	46 <i>10.3</i>	7 <i>6.6</i>	3 <i>11.0</i>	198 <i>8.7</i>	
Tetralogy of Fallot	98 <i>6.3</i>	2 <i>4.3</i>	31 <i>6.9</i>	4 <i>3.8</i>	1 <i>3.7</i>	143 <i>6.3</i>	
Transposition of the great arteries (TGA)	108 <i>6.9</i>	1 <i>2.2</i>	27 <i>6.1</i>	6 <i>5.7</i>	3 <i>11.0</i>	155 <i>6.8</i>	
Trisomy 21 (Down syndrome)	270 <i>17.3</i>	10 <i>21.5</i>	114 <i>25.6</i>	19 <i>17.9</i>	7 <i>25.6</i>	431 <i>18.9</i>	
Total live births	155778	4650	44612	10600	2738	228115	
Male live births	80038	2335	22723	5423	1418	116950	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Oregon**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	110	4	114	
	<i>5.7</i>	<i>1.1</i>	<i>5.0</i>	
Trisomy 21 (Down syndrome)	248	183	431	
	<i>12.9</i>	<i>51.7</i>	<i>18.9</i>	
Total live births	192704	35406	228115	

**Total includes unknown maternal age

Puerto Rico
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Maternal Race/Ethnicity			
Defect	Hispanic	Total**	Notes
Anencephalus	77 3.8	77 3.8	
Anophthalmia/microphthalmia	32 1.6	32 1.6	
Anotia/microtia	47 2.3	47 2.3	
Aortic valve stenosis	22 1.1	22 1.1	
Atrial septal defect	506 24.8	506 24.8	
Atrioventricular septal defect (Endocardial cushion defect)	96 4.7	96 4.7	1
Bladder exstrophy	3 0.1	3 0.1	
Cleft lip alone	73 3.6	73 3.6	
Cleft lip with cleft palate	130 6.4	130 6.4	
Cleft palate alone	129 6.3	129 6.3	
Clubfoot	351 17.2	351 17.2	
Coarctation of the aorta	61 3.0	61 3.0	
Common truncus (truncus arteriosus)	11 0.5	11 0.5	
Double outlet right ventricle	35 1.7	35 1.7	
Ebstein anomaly	21 1.0	21 1.0	
Encephalocele	24 1.2	24 1.2	
Gastroschisis	99 4.9	99 4.9	
Hypoplastic left heart syndrome	41 2.0	41 2.0	
Hypospadias*	440 41.9	440 41.9	
Limb deficiencies (reduction defects)	147 7.2	147 7.2	
Omphalocele	38 1.9	38 1.9	
Pulmonary valve atresia and stenosis	191 9.4	191 9.4	
Pulmonary valve atresia	21 1.0	21 1.0	
Spina bifida without anencephalus	106 5.2	106 5.2	
Tetralogy of Fallot	82 4.0	82 4.0	
Total anomalous pulmonary venous connection	14 0.7	14 0.7	
Transposition of the great arteries (TGA)	54 2.7	54 2.7	
Dextro-transposition of great arteries (d-TGA)	54 2.7	54 2.7	
Tricuspid valve atresia and stenosis	16 0.8	16 0.8	
Tricuspid valve atresia	19 0.9	19 0.9	
Trisomy 13	33 1.6	33 1.6	
Trisomy 18	82 4.0	82 4.0	

Puerto Rico**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Maternal Race/Ethnicity			
Defect	Hispanic	Total**	Notes
Trisomy 21 (Down syndrome)	268 <i>13.2</i>	268 <i>13.2</i>	
Ventricular septal defect	529 <i>26.0</i>	529 <i>26.0</i>	2
Total live births	203719	203719	
Male live births	104909	104909	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Puerto Rico**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	98 <i>5.3</i>	0 <i>0.0</i>	99 <i>4.9</i>	
Trisomy 13	23 <i>1.2</i>	10 <i>5.7</i>	33 <i>1.6</i>	
Trisomy 18	52 <i>2.8</i>	30 <i>17.1</i>	82 <i>4.0</i>	
Trisomy 21 (Down syndrome)	160 <i>8.6</i>	108 <i>61.5</i>	268 <i>13.2</i>	
Total live births	186089	17566	203719	

**Total includes unknown maternal age

Notes

1.Data for this condition only include atrioventricular canal.

2.Data for this condition exclude probable diagnosis and exclude inlet/posterior type ventricular septal defect only in the presence of atrioventricular canal.

General comments

-Fetal deaths include includes spontaneous abortions and stillbirths.

-There is no gestational age cut off for terminations.

Rhode Island
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	9 2.7	1 2.1	1 0.8	0 0.0	0 0.0	11 2.0	
Anophthalmia/microphthalmia	2 0.6	1 2.1	1 0.8	0 0.0	0 0.0	5 0.9	
Anotia/microtia	1 0.3	1 2.1	0 0.0	0 0.0	0 0.0	2 0.4	
Aortic valve stenosis	8 2.4	0 0.0	2 1.6	0 0.0	0 0.0	10 1.9	
Atrial septal defect	88 26.5	20 42.2	25 19.9	3 11.8	2 46.4	147 27.3	
Atrioventricular septal defect (Endocardial cushion defect)	10 3.0	0 0.0	1 0.8	0 0.0	0 0.0	11 2.0	
Biliary atresia	1 0.3	0 0.0	1 0.8	0 0.0	0 0.0	3 0.6	
Bladder exstrophy	0 0.0	1 2.1	0 0.0	0 0.0	0 0.0	1 0.2	
Choanal atresia	1 0.3	1 2.1	0 0.0	0 0.0	0 0.0	2 0.4	
Cleft lip alone	13 3.9	0 0.0	4 3.2	0 0.0	0 0.0	18 3.3	
Cleft lip with cleft palate	16 4.8	0 0.0	9 7.2	1 3.9	1 23.2	28 5.2	
Cleft palate alone	15 4.5	1 2.1	2 1.6	3 11.8	0 0.0	22 4.1	
Cloacal exstrophy	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 0.2	
Clubfoot	50 15.1	8 16.9	16 12.7	3 11.8	0 0.0	79 14.7	
Coarctation of the aorta	9 2.7	3 6.3	2 1.6	1 3.9	0 0.0	15 2.8	
Common truncus (truncus arteriosus)	1 0.3	1 2.1	0 0.0	0 0.0	0 0.0	2 0.4	
Congenital cataract	1 0.3	1 2.1	2 1.6	0 0.0	0 0.0	4 0.7	
Congenital posterior urethral valves	2 0.6	1 2.1	1 0.8	0 0.0	0 0.0	4 0.7	
Craniosynostosis	20 6.0	0 0.0	6 4.8	3 11.8	0 0.0	30 5.6	
Deletion 22q11.2	1 0.3	0 0.0	0 0.0	0 0.0	0 0.0	1 0.2	
Diaphragmatic hernia	9 2.7	1 2.1	3 2.4	0 0.0	0 0.0	13 2.4	
Double outlet right ventricle	2 0.6	2 4.2	0 0.0	2 7.9	0 0.0	6 1.1	
Ebstein anomaly	3 0.9	1 2.1	1 0.8	0 0.0	0 0.0	5 0.9	
Encephalocele	3 0.9	0 0.0	3 2.4	0 0.0	0 0.0	7 1.3	
Esophageal atresia/tracheoesophageal fistula	7 2.1	0 0.0	1 0.8	0 0.0	0 0.0	8 1.5	
Gastroschisis	10 3.0	1 2.1	12 9.5	0 0.0	0 0.0	24 4.5	
Holoprosencephaly	2 0.6	1 2.1	1 0.8	0 0.0	0 0.0	5 0.9	
Hypoplastic left heart syndrome	7 2.1	4 8.4	4 3.2	1 3.9	0 0.0	16 3.0	
Hypospadias*	175 103.4	17 69.4	33 51.2	6 45.8	1 45.5	237 86.0	
Interrupted aortic arch	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	

Rhode Island**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	12 <i>3.6</i>	2 <i>4.2</i>	5 <i>4.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>3.5</i>	
Omphalocele	9 <i>2.7</i>	1 <i>2.1</i>	4 <i>3.2</i>	1 <i>3.9</i>	0 <i>0.0</i>	15 <i>2.8</i>	
Pulmonary valve atresia and stenosis	15 <i>4.5</i>	2 <i>4.2</i>	13 <i>10.3</i>	4 <i>15.7</i>	0 <i>0.0</i>	36 <i>6.7</i>	
Pulmonary valve atresia	2 <i>0.6</i>	0 <i>0.0</i>	3 <i>2.4</i>	3 <i>11.8</i>	0 <i>0.0</i>	8 <i>1.5</i>	
Rectal and large intestinal atresia/stenosis	10 <i>3.0</i>	3 <i>6.3</i>	6 <i>4.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	20 <i>3.7</i>	
Renal agenesis/hypoplasia	8 <i>2.4</i>	2 <i>4.2</i>	5 <i>4.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>3.0</i>	
Single ventricle	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.2</i>	
Small intestinal atresia/stenosis	15 <i>4.5</i>	5 <i>10.6</i>	8 <i>6.4</i>	2 <i>7.9</i>	0 <i>0.0</i>	31 <i>5.8</i>	
Spina bifida without anencephalus	14 <i>4.2</i>	3 <i>6.3</i>	5 <i>4.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	26 <i>4.8</i>	
Tetralogy of Fallot	6 <i>1.8</i>	3 <i>6.3</i>	3 <i>2.4</i>	1 <i>3.9</i>	0 <i>0.0</i>	13 <i>2.4</i>	
Total anomalous pulmonary venous connection	3 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>0.7</i>	
Transposition of the great arteries (TGA)	3 <i>0.9</i>	0 <i>0.0</i>	2 <i>1.6</i>	1 <i>3.9</i>	0 <i>0.0</i>	9 <i>1.7</i>	
Dextro-transposition of great arteries (d-TGA)	2 <i>0.6</i>	2 <i>4.2</i>	0 <i>0.0</i>	2 <i>7.9</i>	0 <i>0.0</i>	6 <i>1.1</i>	
Tricuspid valve atresia and stenosis	1 <i>0.3</i>	0 <i>0.0</i>	2 <i>1.6</i>	1 <i>3.9</i>	0 <i>0.0</i>	4 <i>0.7</i>	
Tricuspid valve atresia	1 <i>0.3</i>	0 <i>0.0</i>	2 <i>1.6</i>	1 <i>3.9</i>	0 <i>0.0</i>	4 <i>0.7</i>	
Trisomy 13	6 <i>1.8</i>	3 <i>6.3</i>	3 <i>2.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>2.4</i>	
Trisomy 18	10 <i>3.0</i>	3 <i>6.3</i>	4 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	20 <i>3.7</i>	
Trisomy 21 (Down syndrome)	53 <i>16.0</i>	9 <i>19.0</i>	14 <i>11.1</i>	1 <i>3.9</i>	1 <i>23.2</i>	93 <i>17.3</i>	
Turner syndrome†	3 <i>1.8</i>	0 <i>0.0</i>	1 <i>1.6</i>	1 <i>8.1</i>	0 <i>0.0</i>	5 <i>1.9</i>	
Ventricular septal defect	146 <i>44.0</i>	31 <i>65.5</i>	41 <i>32.6</i>	10 <i>39.3</i>	2 <i>46.4</i>	237 <i>44.0</i>	1
Total live births §	33157	4735	12584	2544	431	53843	
Male live births	16928	2451	6442	1309	220	27560	
Female live births	16229	2283	6142	1235	211	26282	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Rhode Island**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	23 <i>5.1</i>	1 <i>1.1</i>	24 <i>4.5</i>	
Trisomy 13	7 <i>1.6</i>	5 <i>5.5</i>	13 <i>2.4</i>	
Trisomy 18	7 <i>1.6</i>	11 <i>12.1</i>	20 <i>3.7</i>	
Trisomy 21 (Down syndrome)	39 <i>8.7</i>	45 <i>49.4</i>	93 <i>17.3</i>	
Total live births	44738	9103	53843	

**Total includes unknown maternal age

Notes

1.Data for this condition include probable cases.

General comments

-Stillbirths are fetal deaths at 20 weeks or more gestation.

-Terminations are induced fetal deaths at 20 weeks or more gestation.

South Carolina
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	43 <i>2.6</i>	13 <i>1.4</i>	13 <i>5.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	71 <i>2.4</i>	
Anophthalmia/microphthalmia	14 <i>0.8</i>	8 <i>0.9</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.8</i>	
Anotia/microtia	13 <i>0.8</i>	10 <i>1.1</i>	1 <i>0.4</i>	1 <i>1.9</i>	0 <i>0.0</i>	25 <i>0.9</i>	
Aortic valve stenosis	15 <i>0.9</i>	9 <i>1.0</i>	3 <i>1.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	27 <i>0.9</i>	
Atrioventricular septal defect (Endocardial cushion defect)	96 <i>5.7</i>	51 <i>5.4</i>	13 <i>5.3</i>	1 <i>1.9</i>	0 <i>0.0</i>	163 <i>5.6</i>	
Biliary atresia	6 <i>0.4</i>	9 <i>1.0</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.5</i>	
Bladder exstrophy	4 <i>0.2</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.2</i>	1
Choanal atresia	21 <i>1.3</i>	9 <i>1.0</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	33 <i>1.1</i>	
Cleft palate alone	89 <i>5.3</i>	34 <i>3.6</i>	12 <i>4.9</i>	5 <i>9.6</i>	0 <i>0.0</i>	142 <i>4.9</i>	
Coarctation of the aorta	110 <i>6.6</i>	46 <i>4.9</i>	12 <i>4.9</i>	3 <i>5.8</i>	1 <i>8.3</i>	174 <i>5.9</i>	
Common truncus (truncus arteriosus)	11 <i>0.7</i>	3 <i>0.3</i>	1 <i>0.4</i>	0 <i>0.0</i>	1 <i>8.3</i>	16 <i>0.5</i>	
Congenital cataract	11 <i>0.7</i>	6 <i>0.6</i>	4 <i>1.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>0.7</i>	
Diaphragmatic hernia	50 <i>3.0</i>	27 <i>2.9</i>	9 <i>3.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	89 <i>3.0</i>	
Double outlet right ventricle	42 <i>2.5</i>	35 <i>3.7</i>	4 <i>1.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	83 <i>2.8</i>	
Ebstein anomaly	12 <i>0.7</i>	5 <i>0.5</i>	3 <i>1.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	20 <i>0.7</i>	
Encephalocele	16 <i>1.0</i>	10 <i>1.1</i>	6 <i>2.4</i>	1 <i>1.9</i>	0 <i>0.0</i>	33 <i>1.1</i>	
Esophageal atresia/tracheoesophageal fistula	34 <i>2.0</i>	12 <i>1.3</i>	3 <i>1.2</i>	1 <i>1.9</i>	0 <i>0.0</i>	51 <i>1.7</i>	
Gastroschisis	81 <i>4.8</i>	24 <i>2.6</i>	11 <i>4.5</i>	1 <i>1.9</i>	0 <i>0.0</i>	119 <i>4.1</i>	
Hypoplastic left heart syndrome	65 <i>3.9</i>	48 <i>5.1</i>	8 <i>3.3</i>	1 <i>1.9</i>	0 <i>0.0</i>	123 <i>4.2</i>	
Limb deficiencies (reduction defects)	107 <i>6.4</i>	61 <i>6.5</i>	14 <i>5.7</i>	8 <i>15.4</i>	1 <i>8.3</i>	192 <i>6.6</i>	
Omphalocele	39 <i>2.3</i>	23 <i>2.5</i>	3 <i>1.2</i>	0 <i>0.0</i>	1 <i>8.3</i>	68 <i>2.3</i>	
Pulmonary valve atresia and stenosis	134 <i>8.0</i>	105 <i>11.2</i>	20 <i>8.1</i>	4 <i>7.7</i>	1 <i>8.3</i>	269 <i>9.2</i>	
Rectal and large intestinal atresia/stenosis	77 <i>4.6</i>	36 <i>3.8</i>	2 <i>0.8</i>	4 <i>7.7</i>	0 <i>0.0</i>	120 <i>4.1</i>	
Renal agenesis/hypoplasia	85 <i>5.1</i>	50 <i>5.3</i>	11 <i>4.5</i>	4 <i>7.7</i>	0 <i>0.0</i>	150 <i>5.1</i>	
Spina bifida without anencephalus	60 <i>3.6</i>	23 <i>2.5</i>	6 <i>2.4</i>	4 <i>7.7</i>	0 <i>0.0</i>	97 <i>3.3</i>	
Tetralogy of Fallot	84 <i>5.0</i>	52 <i>5.6</i>	11 <i>4.5</i>	1 <i>1.9</i>	0 <i>0.0</i>	150 <i>5.1</i>	
Transposition of the great arteries (TGA)	45 <i>2.7</i>	31 <i>3.3</i>	5 <i>2.0</i>	1 <i>1.9</i>	0 <i>0.0</i>	84 <i>2.9</i>	
Tricuspid valve atresia and stenosis	18 <i>1.1</i>	14 <i>1.5</i>	0 <i>0.0</i>	1 <i>1.9</i>	0 <i>0.0</i>	34 <i>1.2</i>	
Trisomy 13	13 <i>0.8</i>	12 <i>1.3</i>	6 <i>2.4</i>	1 <i>1.9</i>	0 <i>0.0</i>	32 <i>1.1</i>	
Trisomy 18	46 <i>2.7</i>	24 <i>2.6</i>	9 <i>3.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	79 <i>2.7</i>	

South Carolina**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Trisomy 21 (Down syndrome)	200 <i>11.9</i>	73 <i>7.8</i>	42 <i>17.1</i>	6 <i>11.5</i>	0 <i>0.0</i>	328 <i>11.2</i>	
Ventricular septal defect	636 <i>37.9</i>	333 <i>35.6</i>	139 <i>56.5</i>	19 <i>36.5</i>	1 <i>8.3</i>	1144 <i>39.1</i>	2
Total live births	167687	93632	24588	5206	1199	292526	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

South Carolina**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	114 <i>4.4</i>	5 <i>1.5</i>	119 <i>4.1</i>	
Trisomy 13	23 <i>0.9</i>	9 <i>2.8</i>	32 <i>1.1</i>	
Trisomy 18	41 <i>1.6</i>	38 <i>11.7</i>	79 <i>2.7</i>	
Trisomy 21 (Down syndrome)	177 <i>6.8</i>	151 <i>46.3</i>	328 <i>11.2</i>	
Total live births	259926	32583	292526	

**Total includes unknown maternal age

Notes

- 1.Data for this condition begin in 2010.
- 2.Data for this condition include confirmed cases only.

General comments

- Abortions in South Carolina are not usually performed after 24 weeks gestation.
- Fetal Deaths include those that occur in a hospital at 20 weeks or more gestation.

Tennessee**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	34 <i>1.6</i>	8 <i>1.2</i>	8 <i>2.8</i>	1 <i>1.5</i>	0 <i>0.0</i>	51 <i>1.6</i>	
Anophthalmia/microphthalmia	26 <i>1.2</i>	12 <i>1.8</i>	3 <i>1.1</i>	1 <i>1.5</i>	0 <i>0.0</i>	43 <i>1.3</i>	
Anotia/microtia	17 <i>0.8</i>	4 <i>0.6</i>	7 <i>2.5</i>	2 <i>2.9</i>	0 <i>0.0</i>	30 <i>0.9</i>	
Aortic valve stenosis	51 <i>2.4</i>	11 <i>1.7</i>	7 <i>2.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	69 <i>2.1</i>	
Atrial septal defect	2727 <i>126.5</i>	1363 <i>204.7</i>	323 <i>113.2</i>	54 <i>78.5</i>	1 <i>21.0</i>	4480 <i>139.5</i>	
Atrioventricular septal defect (Endocardial cushion defect)	109 <i>5.1</i>	42 <i>6.3</i>	14 <i>4.9</i>	3 <i>4.4</i>	1 <i>21.0</i>	170 <i>5.3</i>	1
Biliary atresia	22 <i>1.0</i>	8 <i>1.2</i>	4 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	35 <i>1.1</i>	
Bladder exstrophy	9 <i>0.4</i>	2 <i>0.3</i>	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.4</i>	
Choanal atresia	49 <i>2.3</i>	6 <i>0.9</i>	6 <i>2.1</i>	1 <i>1.5</i>	0 <i>0.0</i>	62 <i>1.9</i>	
Cleft palate alone	211 <i>9.8</i>	41 <i>6.2</i>	21 <i>7.4</i>	4 <i>5.8</i>	1 <i>21.0</i>	278 <i>8.7</i>	
Coarctation of the aorta	177 <i>8.2</i>	46 <i>6.9</i>	24 <i>8.4</i>	2 <i>2.9</i>	0 <i>0.0</i>	251 <i>7.8</i>	
Common truncus (truncus arteriosus)	24 <i>1.1</i>	9 <i>1.4</i>	2 <i>0.7</i>	1 <i>1.5</i>	0 <i>0.0</i>	36 <i>1.1</i>	
Congenital cataract	43 <i>2.0</i>	16 <i>2.4</i>	3 <i>1.1</i>	3 <i>4.4</i>	0 <i>0.0</i>	65 <i>2.0</i>	
Diaphragmatic hernia	93 <i>4.3</i>	37 <i>5.6</i>	13 <i>4.6</i>	1 <i>1.5</i>	0 <i>0.0</i>	144 <i>4.5</i>	
Ebstein anomaly	30 <i>1.4</i>	10 <i>1.5</i>	6 <i>2.1</i>	2 <i>2.9</i>	0 <i>0.0</i>	48 <i>1.5</i>	
Encephalocele	27 <i>1.3</i>	9 <i>1.4</i>	8 <i>2.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	44 <i>1.4</i>	
Esophageal atresia/tracheoesophageal fistula	79 <i>3.7</i>	15 <i>2.3</i>	12 <i>4.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	106 <i>3.3</i>	
Gastroschisis	147 <i>6.8</i>	22 <i>3.3</i>	15 <i>5.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	187 <i>5.8</i>	
Hypoplastic left heart syndrome	80 <i>3.7</i>	27 <i>4.1</i>	15 <i>5.3</i>	1 <i>1.5</i>	1 <i>21.0</i>	125 <i>3.9</i>	
Hypospadias*	1298 <i>117.3</i>	360 <i>105.8</i>	59 <i>40.5</i>	22 <i>62.4</i>	3 <i>127.7</i>	1752 <i>106.5</i>	
Omphalocele	61 <i>2.8</i>	15 <i>2.3</i>	5 <i>1.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	81 <i>2.5</i>	
Pulmonary valve atresia and stenosis	200 <i>9.3</i>	65 <i>9.8</i>	29 <i>10.2</i>	5 <i>7.3</i>	1 <i>21.0</i>	300 <i>9.3</i>	
Pulmonary valve atresia	38 <i>1.8</i>	16 <i>2.4</i>	7 <i>2.5</i>	2 <i>2.9</i>	0 <i>0.0</i>	63 <i>2.0</i>	
Rectal and large intestinal atresia/stenosis	146 <i>6.8</i>	41 <i>6.2</i>	11 <i>3.9</i>	1 <i>1.5</i>	1 <i>21.0</i>	200 <i>6.2</i>	
Renal agenesis/hypoplasia	130 <i>6.0</i>	44 <i>6.6</i>	14 <i>4.9</i>	2 <i>2.9</i>	0 <i>0.0</i>	190 <i>5.9</i>	
Spina bifida without anencephalus	95 <i>4.4</i>	20 <i>3.0</i>	16 <i>5.6</i>	4 <i>5.8</i>	0 <i>0.0</i>	135 <i>4.2</i>	
Tetralogy of Fallot	137 <i>6.4</i>	45 <i>6.8</i>	13 <i>4.6</i>	1 <i>1.5</i>	0 <i>0.0</i>	196 <i>6.1</i>	
Transposition of the great arteries (TGA)	108 <i>5.0</i>	42 <i>6.3</i>	18 <i>6.3</i>	5 <i>7.3</i>	0 <i>0.0</i>	175 <i>5.4</i>	
Dextro-transposition of great arteries (d-TGA)	64 <i>3.0</i>	18 <i>2.7</i>	9 <i>3.2</i>	4 <i>5.8</i>	0 <i>0.0</i>	95 <i>3.0</i>	
Tricuspid valve atresia and stenosis	34 <i>1.6</i>	9 <i>1.4</i>	3 <i>1.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	46 <i>1.4</i>	2

Tennessee**Birth Defects Counts and Prevalence 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Trisomy 13	16 <i>0.7</i>	8 <i>1.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	26 <i>0.8</i>	
Trisomy 18	38 <i>1.8</i>	13 <i>2.0</i>	6 <i>2.1</i>	1 <i>1.5</i>	0 <i>0.0</i>	59 <i>1.8</i>	
Trisomy 21 (Down syndrome)	301 <i>14.0</i>	93 <i>14.0</i>	50 <i>17.5</i>	9 <i>13.1</i>	1 <i>21.0</i>	456 <i>14.2</i>	
Ventricular septal defect	1118 <i>51.9</i>	349 <i>52.4</i>	162 <i>56.8</i>	29 <i>42.2</i>	3 <i>62.9</i>	1667 <i>51.9</i>	3
Total live births	215597	66592	28538	6877	477	321118	
Male live births	110664	34031	14579	3528	235	164532	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Tennessee**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2012 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	186 <i>6.5</i>	1 <i>0.3</i>	187 <i>5.8</i>	
Trisomy 13	20 <i>0.7</i>	6 <i>1.8</i>	26 <i>0.8</i>	
Trisomy 18	42 <i>1.5</i>	17 <i>5.0</i>	59 <i>1.8</i>	
Trisomy 21 (Down syndrome)	278 <i>9.7</i>	178 <i>52.7</i>	456 <i>14.2</i>	
Total live births	287223	33782	321118	

**Total includes unknown maternal age

Notes

- 1.Data for this condition includes inlet ventricular septal defect.
- 2.Data for this condition includes stenosis or hypoplasia.
- 3.Data for this condition includes inlet ventricular septal defect and probable cases.

General comments

-Fetal deaths are defined as 500 grams or more, or 22 weeks gestation or more.

Texas**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	159 <i>2.4</i>	32 <i>1.5</i>	315 <i>3.3</i>	7 <i>0.8</i>	3 <i>8.3</i>	527 <i>2.7</i>	
Anophthalmia/microphthalmia	181 <i>2.7</i>	46 <i>2.1</i>	325 <i>3.5</i>	19 <i>2.3</i>	0 <i>0.0</i>	577 <i>3.0</i>	
Anotia/microtia	150 <i>2.2</i>	27 <i>1.2</i>	473 <i>5.0</i>	18 <i>2.2</i>	2 <i>5.6</i>	673 <i>3.5</i>	
Aortic valve stenosis	169 <i>2.5</i>	31 <i>1.4</i>	282 <i>3.0</i>	11 <i>1.3</i>	2 <i>5.6</i>	496 <i>2.6</i>	
Atrial septal defect	5088 <i>76.3</i>	1856 <i>84.2</i>	7687 <i>81.7</i>	540 <i>64.8</i>	26 <i>72.3</i>	15330 <i>79.3</i>	
Atrioventricular septal defect (Endocardial cushion defect)	330 <i>4.9</i>	102 <i>4.6</i>	389 <i>4.1</i>	30 <i>3.6</i>	1 <i>2.8</i>	857 <i>4.4</i>	
Biliary atresia	40 <i>0.6</i>	12 <i>0.5</i>	67 <i>0.7</i>	14 <i>1.7</i>	1 <i>2.8</i>	136 <i>0.7</i>	
Bladder exstrophy	19 <i>0.3</i>	7 <i>0.3</i>	10 <i>0.1</i>	1 <i>0.1</i>	0 <i>0.0</i>	37 <i>0.2</i>	
Choanal atresia	115 <i>1.7</i>	29 <i>1.3</i>	106 <i>1.1</i>	6 <i>0.7</i>	0 <i>0.0</i>	258 <i>1.3</i>	
Cleft lip alone	256 <i>3.8</i>	55 <i>2.5</i>	259 <i>2.8</i>	26 <i>3.1</i>	1 <i>2.8</i>	602 <i>3.1</i>	
Cleft lip with cleft palate	440 <i>6.6</i>	92 <i>4.2</i>	795 <i>8.5</i>	57 <i>6.8</i>	9 <i>25.0</i>	1405 <i>7.3</i>	
Cleft palate alone	415 <i>6.2</i>	98 <i>4.4</i>	563 <i>6.0</i>	66 <i>7.9</i>	4 <i>11.1</i>	1160 <i>6.0</i>	
Cloacal exstrophy	4 <i>0.1</i>	0 <i>0.0</i>	8 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.1</i>	
Clubfoot	1131 <i>17.0</i>	363 <i>16.5</i>	1579 <i>16.8</i>	79 <i>9.5</i>	11 <i>30.6</i>	3192 <i>16.5</i>	
Coarctation of the aorta	379 <i>5.7</i>	106 <i>4.8</i>	522 <i>5.5</i>	36 <i>4.3</i>	4 <i>11.1</i>	1056 <i>5.5</i>	
Common truncus (truncus arteriosus)	48 <i>0.7</i>	18 <i>0.8</i>	93 <i>1.0</i>	4 <i>0.5</i>	0 <i>0.0</i>	164 <i>0.8</i>	
Congenital cataract	119 <i>1.8</i>	45 <i>2.0</i>	186 <i>2.0</i>	10 <i>1.2</i>	0 <i>0.0</i>	361 <i>1.9</i>	
Congenital posterior urethral valves	66 <i>1.0</i>	39 <i>1.8</i>	55 <i>0.6</i>	16 <i>1.9</i>	0 <i>0.0</i>	176 <i>0.9</i>	
Craniosynostosis	510 <i>7.6</i>	64 <i>2.9</i>	580 <i>6.2</i>	28 <i>3.4</i>	2 <i>5.6</i>	1192 <i>6.2</i>	
Deletion 22q11.2	50 <i>0.7</i>	19 <i>0.9</i>	86 <i>0.9</i>	5 <i>0.6</i>	2 <i>5.6</i>	163 <i>0.8</i>	
Diaphragmatic hernia	193 <i>2.9</i>	54 <i>2.5</i>	279 <i>3.0</i>	19 <i>2.3</i>	1 <i>2.8</i>	546 <i>2.8</i>	
Double outlet right ventricle	132 <i>2.0</i>	40 <i>1.8</i>	277 <i>2.9</i>	16 <i>1.9</i>	1 <i>2.8</i>	469 <i>2.4</i>	
Ebstein anomaly	50 <i>0.7</i>	7 <i>0.3</i>	80 <i>0.9</i>	3 <i>0.4</i>	0 <i>0.0</i>	141 <i>0.7</i>	
Encephalocele	51 <i>0.8</i>	29 <i>1.3</i>	108 <i>1.1</i>	12 <i>1.4</i>	0 <i>0.0</i>	205 <i>1.1</i>	
Esophageal atresia/tracheoesophageal fistula	183 <i>2.7</i>	42 <i>1.9</i>	201 <i>2.1</i>	14 <i>1.7</i>	1 <i>2.8</i>	442 <i>2.3</i>	
Gastroschisis	370 <i>5.5</i>	99 <i>4.5</i>	652 <i>6.9</i>	25 <i>3.0</i>	2 <i>5.6</i>	1155 <i>6.0</i>	
Holoprosencephaly	51 <i>0.8</i>	18 <i>0.8</i>	105 <i>1.1</i>	4 <i>0.5</i>	0 <i>0.0</i>	180 <i>0.9</i>	
Hypoplastic left heart syndrome	181 <i>2.7</i>	57 <i>2.6</i>	203 <i>2.2</i>	12 <i>1.4</i>	1 <i>2.8</i>	458 <i>2.4</i>	
Hypospadias*	3004 <i>87.8</i>	832 <i>74.1</i>	2141 <i>44.7</i>	269 <i>62.2</i>	8 <i>43.7</i>	6317 <i>63.9</i>	
Interrupted aortic arch	43 <i>0.6</i>	14 <i>0.6</i>	53 <i>0.6</i>	2 <i>0.2</i>	0 <i>0.0</i>	112 <i>0.6</i>	

Texas**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	374 <i>5.6</i>	147 <i>6.7</i>	568 <i>6.0</i>	22 <i>2.6</i>	4 <i>11.1</i>	1125 <i>5.8</i>	
Omphalocele	157 <i>2.4</i>	53 <i>2.4</i>	179 <i>1.9</i>	17 <i>2.0</i>	0 <i>0.0</i>	407 <i>2.1</i>	
Pulmonary valve atresia and stenosis	646 <i>9.7</i>	242 <i>11.0</i>	1167 <i>12.4</i>	56 <i>6.7</i>	5 <i>13.9</i>	2134 <i>11.0</i>	
Pulmonary valve atresia	65 <i>1.0</i>	23 <i>1.0</i>	100 <i>1.1</i>	8 <i>1.0</i>	0 <i>0.0</i>	200 <i>1.0</i>	
Rectal and large intestinal atresia/stenosis	324 <i>4.9</i>	104 <i>4.7</i>	551 <i>5.9</i>	33 <i>4.0</i>	4 <i>11.1</i>	1030 <i>5.3</i>	
Renal agenesis/hypoplasia	428 <i>6.4</i>	160 <i>7.3</i>	623 <i>6.6</i>	60 <i>7.2</i>	3 <i>8.3</i>	1293 <i>6.7</i>	
Single ventricle	45 <i>0.7</i>	15 <i>0.7</i>	86 <i>0.9</i>	5 <i>0.6</i>	0 <i>0.0</i>	151 <i>0.8</i>	
Small intestinal atresia/stenosis	224 <i>3.4</i>	74 <i>3.4</i>	342 <i>3.6</i>	18 <i>2.2</i>	1 <i>2.8</i>	661 <i>3.4</i>	
Spina bifida without anencephalus	247 <i>3.7</i>	61 <i>2.8</i>	436 <i>4.6</i>	14 <i>1.7</i>	1 <i>2.8</i>	769 <i>4.0</i>	
Tetralogy of Fallot	309 <i>4.6</i>	112 <i>5.1</i>	422 <i>4.5</i>	39 <i>4.7</i>	3 <i>8.3</i>	900 <i>4.7</i>	
Total anomalous pulmonary venous connection	81 <i>1.2</i>	22 <i>1.0</i>	205 <i>2.2</i>	19 <i>2.3</i>	0 <i>0.0</i>	329 <i>1.7</i>	
Transposition of the great arteries (TGA)	262 <i>3.9</i>	56 <i>2.5</i>	343 <i>3.6</i>	25 <i>3.0</i>	0 <i>0.0</i>	690 <i>3.6</i>	
Dextro-transposition of great arteries (d-TGA)	226 <i>3.4</i>	48 <i>2.2</i>	299 <i>3.2</i>	22 <i>2.6</i>	0 <i>0.0</i>	598 <i>3.1</i>	
Tricuspid valve atresia and stenosis	131 <i>2.0</i>	53 <i>2.4</i>	183 <i>1.9</i>	15 <i>1.8</i>	1 <i>2.8</i>	385 <i>2.0</i>	
Tricuspid valve atresia	56 <i>0.8</i>	24 <i>1.1</i>	64 <i>0.7</i>	7 <i>0.8</i>	0 <i>0.0</i>	151 <i>0.8</i>	
Trisomy 13	91 <i>1.4</i>	28 <i>1.3</i>	110 <i>1.2</i>	15 <i>1.8</i>	0 <i>0.0</i>	248 <i>1.3</i>	
Trisomy 18	183 <i>2.7</i>	56 <i>2.5</i>	255 <i>2.7</i>	28 <i>3.4</i>	0 <i>0.0</i>	530 <i>2.7</i>	
Trisomy 21 (Down syndrome)	872 <i>13.1</i>	229 <i>10.4</i>	1570 <i>16.7</i>	97 <i>11.6</i>	4 <i>11.1</i>	2802 <i>14.5</i>	
Turner syndrome†	103 <i>3.2</i>	20 <i>1.8</i>	128 <i>2.8</i>	10 <i>2.5</i>	0 <i>0.0</i>	263 <i>2.8</i>	
Ventricular septal defect	3933 <i>58.9</i>	1169 <i>53.1</i>	7155 <i>76.1</i>	472 <i>56.6</i>	30 <i>83.4</i>	12859 <i>66.5</i>	1
Total live births	667219	220352	940681	83368	3596	1934167	
Male live births	342038	112219	479127	43267	1832	988179	
Female live births	325181	108133	461554	40101	1764	945988	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Texas**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	1136 <i>6.7</i>	19 <i>0.8</i>	1155 <i>6.0</i>	
Trisomy 13	175 <i>1.0</i>	73 <i>3.0</i>	248 <i>1.3</i>	
Trisomy 18	272 <i>1.6</i>	258 <i>10.5</i>	530 <i>2.7</i>	
Trisomy 21 (Down syndrome)	1472 <i>8.7</i>	1330 <i>54.3</i>	2802 <i>14.5</i>	
Total live births	1689334	244749	1934167	

**Total includes unknown maternal age

Notes

1.Data for this condition include inlet ventricular septal defect.

General comments

-Data for all conditions exclude possible/probable cases.

-Fetal death defined as spontaneous death of a conception product prior to the complete expulsion/extraction from its mother, regardless of gestational length. The labor onset may be natural/induced, but not a result of an intended procedure.

Utah**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	47 2.3	2 7.4	15 3.8	1 1.1	1 3.5	67 2.6	
Anophthalmia/microphthalmia	4 0.2	1 3.7	4 1.0	0 0.0	0 0.0	9 0.3	
Anotia/microtia	61 3.0	2 7.4	28 7.0	10 11.2	1 3.5	102 3.9	
Aortic valve stenosis	62 3.1	0 0.0	15 3.8	4 4.5	1 3.5	82 3.2	
Atrial septal defect	845 41.7	13 48.1	185 46.6	50 56.0	12 42.1	1108 42.7	
Atrioventricular septal defect (Endocardial cushion defect)	148 7.3	4 14.8	22 5.5	13 14.6	1 3.5	188 7.2	
Biliary atresia	14 0.7	0 0.0	2 0.5	1 1.1	0 0.0	17 0.7	
Bladder exstrophy	4 0.2	0 0.0	0 0.0	1 1.1	0 0.0	5 0.2	
Choanal atresia	33 1.6	0 0.0	4 1.0	0 0.0	0 0.0	37 1.4	
Cleft lip alone	118 5.8	3 11.1	13 3.3	4 4.5	1 3.5	142 5.5	
Cleft lip with cleft palate	163 8.0	3 11.1	39 9.8	2 2.2	3 10.5	211 8.1	
Cleft palate alone	121 6.0	2 7.4	14 3.5	10 11.2	4 14.0	152 5.9	
Cloacal exstrophy	9 0.4	0 0.0	0 0.0	1 1.1	0 0.0	10 0.4	
Clubfoot	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	
Coarctation of the aorta	206 10.2	2 7.4	28 7.0	5 5.6	4 14.0	246 9.5	
Common truncus (truncus arteriosus)	16 0.8	1 3.7	2 0.5	1 1.1	0 0.0	20 0.8	
Congenital cataract	59 2.9	0 0.0	12 3.0	3 3.4	1 3.5	75 2.9	
Congenital posterior urethral valves	29 1.4	0 0.0	5 1.3	1 1.1	0 0.0	35 1.3	1
Craniosynostosis	223 11.0	3 11.1	45 11.3	5 5.6	4 14.0	281 10.8	
Deletion 22q11.2	21 1.0	1 3.7	3 0.8	6 6.7	3 10.5	34 1.3	
Diaphragmatic hernia	35 1.7	1 3.7	6 1.5	2 2.2	2 7.0	46 1.8	
Double outlet right ventricle	41 2.0	0 0.0	5 1.3	2 2.2	1 3.5	49 1.9	
Ebstein anomaly	21 1.0	0 0.0	5 1.3	1 1.1	0 0.0	27 1.0	
Encephalocele	20 1.0	0 0.0	3 0.8	0 0.0	0 0.0	23 0.9	
Esophageal atresia/tracheoesophageal fistula	54 2.7	0 0.0	9 2.3	3 3.4	2 7.0	69 2.7	
Gastroschisis	77 3.8	0 0.0	19 4.8	4 4.5	1 3.5	102 3.9	
Holoprosencephaly	27 1.3	2 7.4	7 1.8	0 0.0	0 0.0	36 1.4	
Hypoplastic left heart syndrome	64 3.2	2 7.4	8 2.0	4 4.5	1 3.5	79 3.0	
Hypospadias*	811 77.7	7 50.0	51 25.3	24 52.0	7 48.7	902 67.6	
Interrupted aortic arch	9 0.4	1 3.7	4 1.0	3 3.4	1 3.5	18 0.7	

Utah**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Limb deficiencies (reduction defects)	125 6.2	4 14.8	26 6.5	2 2.2	1 3.5	160 6.2	
Omphalocele	62 3.1	1 3.7	17 4.3	1 1.1	3 10.5	84 3.2	
Pulmonary valve atresia and stenosis	285 14.1	5 18.5	57 14.3	17 19.0	4 14.0	370 14.3	
Pulmonary valve atresia	17 0.8	0 0.0	4 1.0	2 2.2	0 0.0	23 0.9	
Rectal and large intestinal atresia/stenosis	77 3.8	1 3.7	9 2.3	9 10.1	0 0.0	97 3.7	
Renal agenesis/hypoplasia	74 3.7	0 0.0	13 3.3	5 5.6	3 10.5	96 3.7	
Single ventricle	10 0.5	0 0.0	3 0.8	0 0.0	0 0.0	13 0.5	
Small intestinal atresia/stenosis	29 1.4	0 0.0	5 1.3	4 4.5	0 0.0	38 1.5	
Spina bifida without anencephalus	66 3.3	2 7.4	13 3.3	3 3.4	2 7.0	86 3.3	
Tetralogy of Fallot	62 3.1	1 3.7	9 2.3	5 5.6	3 10.5	81 3.1	
Total anomalous pulmonary venous connection	19 0.9	0 0.0	8 2.0	0 0.0	1 3.5	28 1.1	
Transposition of the great arteries (TGA)	105 5.2	1 3.7	18 4.5	4 4.5	1 3.5	130 5.0	
Dextro-transposition of great arteries (d-TGA)	50 2.5	1 3.7	8 2.0	3 3.4	0 0.0	62 2.4	
Tricuspid valve atresia and stenosis	26 1.3	1 3.7	7 1.8	0 0.0	0 0.0	34 1.3	
Tricuspid valve atresia	26 1.3	1 3.7	7 1.8	0 0.0	0 0.0	34 1.3	
Trisomy 13	31 1.5	1 3.7	9 2.3	2 2.2	0 0.0	43 1.7	
Trisomy 18	71 3.5	1 3.7	14 3.5	2 2.2	2 7.0	93 3.6	
Trisomy 21 (Down syndrome)	301 14.8	4 14.8	79 19.9	22 24.6	5 17.5	417 16.1	
Turner syndrome†	44 4.5	0 0.0	12 6.1	0 0.0	1 7.1	58 4.6	
Ventricular septal defect	486 24.0	8 29.6	124 31.2	20 22.4	6 21.0	646 24.9	
Total live births §	202731	2703	39722	8927	2852	259509	
Male live births	104422	1399	20175	4611	1438	133356	
Female live births	98308	1304	19547	4316	1414	126151	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births. Excludes male phenotype.

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Utah**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	100 <i>4.3</i>	2 <i>0.7</i>	102 <i>3.9</i>	
Trisomy 13	28 <i>1.2</i>	15 <i>5.2</i>	43 <i>1.7</i>	
Trisomy 18	61 <i>2.6</i>	32 <i>11.1</i>	93 <i>3.6</i>	
Trisomy 21 (Down syndrome)	216 <i>9.4</i>	201 <i>69.7</i>	417 <i>16.1</i>	
Total live births	230654	28840	259509	

**Total includes unknown maternal age

Notes

1.Data for this condition include congenital posterior urethral valves or posterior urethral obstruction only.

General comments

- Data for 2013 are provisional.
- Stillbirths are based on ≥ 20 weeks gestation.
- Terminations include any weeks' gestation.

Vermont**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	2 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.7</i>	
Anotia/microtia	4 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	5 <i>1.6</i>	
Aortic valve stenosis	18 <i>6.3</i>	0 <i>0.0</i>	1 <i>24.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	19 <i>6.3</i>	
Atrial septal defect	224 <i>78.9</i>	4 <i>102.6</i>	6 <i>146.3</i>	4 <i>64.8</i>	1 <i>243.9</i>	242 <i>79.6</i>	
Atrioventricular septal defect (Endocardial cushion defect)	16 <i>5.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>5.3</i>	
Bladder exstrophy	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	2 <i>0.7</i>	
Cleft lip alone	17 <i>6.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>5.9</i>	
Cleft lip with cleft palate	13 <i>4.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>4.3</i>	
Cleft palate alone	27 <i>9.5</i>	0 <i>0.0</i>	1 <i>24.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	28 <i>9.2</i>	
Coarctation of the aorta	21 <i>7.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	21 <i>6.9</i>	
Common truncus (truncus arteriosus)	1 <i>0.4</i>	0 <i>0.0</i>	1 <i>24.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.7</i>	
Diaphragmatic hernia	13 <i>4.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	13 <i>4.3</i>	
Double outlet right ventricle	4 <i>1.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	4 <i>1.3</i>	
Ebstein anomaly	1 <i>0.4</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.3</i>	
Encephalocele	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Esophageal atresia/tracheoesophageal fistula	9 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	10 <i>3.3</i>	
Gastroschisis	11 <i>3.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>3.9</i>	
Hypoplastic left heart syndrome	9 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	9 <i>3.0</i>	
Hypospadias*	115 <i>77.7</i>	3 <i>154.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	119 <i>75.1</i>	
Omphalocele	4 <i>1.4</i>	1 <i>25.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>1.6</i>	
Pulmonary valve atresia and stenosis	47 <i>16.6</i>	1 <i>25.6</i>	1 <i>24.4</i>	1 <i>16.2</i>	0 <i>0.0</i>	51 <i>16.8</i>	
Pulmonary valve atresia	2 <i>0.7</i>	1 <i>25.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>1.0</i>	
Rectal and large intestinal atresia/stenosis	18 <i>6.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	18 <i>5.9</i>	
Renal agenesis/hypoplasia	19 <i>6.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	20 <i>6.6</i>	
Small intestinal atresia/stenosis	10 <i>3.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	11 <i>3.6</i>	1
Spina bifida without anencephalus	6 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>2.0</i>	
Tetralogy of Fallot	10 <i>3.5</i>	1 <i>25.6</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	12 <i>3.9</i>	
Transposition of the great arteries (TGA)	7 <i>2.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	8 <i>2.6</i>	
Dextro-transposition of great arteries (d-TGA)	5 <i>1.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	6 <i>2.0</i>	
Tricuspid valve atresia and stenosis	2 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.7</i>	

Vermont**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Trisomy 13	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Trisomy 18	6 <i>2.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	6 <i>2.0</i>	
Trisomy 21 (Down syndrome)	32 <i>11.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>16.2</i>	0 <i>0.0</i>	33 <i>10.9</i>	
Ventricular septal defect	181 <i>63.8</i>	5 <i>128.2</i>	3 <i>73.2</i>	3 <i>48.6</i>	0 <i>0.0</i>	196 <i>64.5</i>	
Total live births	28376	390	410	617	41	30391	
Male live births	14802	194	207	332	21	15848	

*Hypospadias prevalence per 10,000 male live births

**Total includes unknown and other maternal race/ethnicity

Vermont**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	12 <i>4.7</i>	0 <i>0.0</i>	12 <i>3.9</i>	
Trisomy 13	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Trisomy 18	3 <i>1.2</i>	3 <i>6.1</i>	6 <i>2.0</i>	
Trisomy 21 (Down syndrome)	18 <i>7.1</i>	15 <i>30.5</i>	33 <i>10.9</i>	
Total live births	25471	4917	30391	

**Total includes unknown maternal age

Notes

1.Data for this condition include only small intestinal atresia.

Virginia
Birth Defects Counts and Prevalence 2009 - 2011 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	18 <i>1.0</i>	5 <i>0.7</i>	7 <i>1.8</i>	4 <i>1.8</i>	0 <i>0.0</i>	36 <i>1.2</i>	
Anophthalmia/microphthalmia	4 <i>0.2</i>	8 <i>1.2</i>	2 <i>0.5</i>	2 <i>0.9</i>	1 <i>23.1</i>	17 <i>0.5</i>	
Anotia/microtia	13 <i>0.7</i>	9 <i>1.3</i>	6 <i>1.6</i>	1 <i>0.4</i>	0 <i>0.0</i>	29 <i>0.9</i>	
Aortic valve stenosis	26 <i>1.5</i>	9 <i>1.3</i>	9 <i>2.3</i>	1 <i>0.4</i>	0 <i>0.0</i>	45 <i>1.4</i>	
Atrial septal defect	1657 <i>92.6</i>	843 <i>126.3</i>	603 <i>156.1</i>	335 <i>150.2</i>	4 <i>92.4</i>	3473 <i>111.9</i>	
Atrioventricular septal defect (Endocardial cushion defect)	52 <i>2.9</i>	38 <i>5.7</i>	13 <i>3.4</i>	4 <i>1.8</i>	0 <i>0.0</i>	108 <i>3.5</i>	
Biliary atresia	9 <i>0.5</i>	4 <i>0.6</i>	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	14 <i>0.5</i>	
Bladder exstrophy	2 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.1</i>	
Choanal atresia	21 <i>1.2</i>	8 <i>1.2</i>	6 <i>1.6</i>	1 <i>0.4</i>	0 <i>0.0</i>	36 <i>1.2</i>	
Cleft lip alone	47 <i>2.6</i>	13 <i>1.9</i>	10 <i>2.6</i>	3 <i>1.3</i>	0 <i>0.0</i>	74 <i>2.4</i>	
Cleft lip with cleft palate	73 <i>4.1</i>	27 <i>4.0</i>	31 <i>8.0</i>	13 <i>5.8</i>	0 <i>0.0</i>	146 <i>4.7</i>	
Cleft palate alone	119 <i>6.6</i>	22 <i>3.3</i>	17 <i>4.4</i>	10 <i>4.5</i>	0 <i>0.0</i>	168 <i>5.4</i>	
Cloacal exstrophy	97 <i>5.4</i>	51 <i>7.6</i>	21 <i>5.4</i>	10 <i>4.5</i>	0 <i>0.0</i>	180 <i>5.8</i>	
Clubfoot	179 <i>10.0</i>	55 <i>8.2</i>	40 <i>10.4</i>	12 <i>5.4</i>	0 <i>0.0</i>	289 <i>9.3</i>	
Coarctation of the aorta	88 <i>4.9</i>	39 <i>5.8</i>	15 <i>3.9</i>	12 <i>5.4</i>	0 <i>0.0</i>	154 <i>5.0</i>	
Common truncus (truncus arteriosus)	12 <i>0.7</i>	9 <i>1.3</i>	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.7</i>	
Congenital cataract	12 <i>0.7</i>	12 <i>1.8</i>	4 <i>1.0</i>	3 <i>1.3</i>	0 <i>0.0</i>	31 <i>1.0</i>	
Congenital posterior urethral valves	22 <i>1.2</i>	16 <i>2.4</i>	5 <i>1.3</i>	2 <i>0.9</i>	0 <i>0.0</i>	46 <i>1.5</i>	
Deletion 22q11.2	3 <i>0.2</i>	2 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.2</i>	
Diaphragmatic hernia	42 <i>2.3</i>	16 <i>2.4</i>	11 <i>2.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	69 <i>2.2</i>	
Double outlet right ventricle	31 <i>1.7</i>	18 <i>2.7</i>	9 <i>2.3</i>	8 <i>3.6</i>	0 <i>0.0</i>	66 <i>2.1</i>	
Ebstein anomaly	12 <i>0.7</i>	8 <i>1.2</i>	9 <i>2.3</i>	1 <i>0.4</i>	0 <i>0.0</i>	30 <i>1.0</i>	
Encephalocele	8 <i>0.4</i>	5 <i>0.7</i>	6 <i>1.6</i>	2 <i>0.9</i>	0 <i>0.0</i>	21 <i>0.7</i>	
Esophageal atresia/tracheoesophageal fistula	33 <i>1.8</i>	19 <i>2.8</i>	6 <i>1.6</i>	3 <i>1.3</i>	0 <i>0.0</i>	61 <i>2.0</i>	
Gastroschisis	59 <i>3.3</i>	22 <i>3.3</i>	16 <i>4.1</i>	3 <i>1.3</i>	0 <i>0.0</i>	100 <i>3.2</i>	
Holoprosencephaly	71 <i>4.0</i>	32 <i>4.8</i>	13 <i>3.4</i>	6 <i>2.7</i>	1 <i>23.1</i>	123 <i>4.0</i>	
Hypoplastic left heart syndrome	37 <i>2.1</i>	18 <i>2.7</i>	11 <i>2.8</i>	4 <i>1.8</i>	0 <i>0.0</i>	70 <i>2.3</i>	
Hypospadias*	597 <i>64.8</i>	181 <i>53.4</i>	63 <i>32.0</i>	53 <i>46.2</i>	1 <i>45.5</i>	900 <i>56.6</i>	
Interrupted aortic arch	5 <i>0.3</i>	9 <i>1.3</i>	2 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	16 <i>0.5</i>	
Limb deficiencies (reduction defects)	51 <i>2.8</i>	17 <i>2.5</i>	7 <i>1.8</i>	4 <i>1.8</i>	0 <i>0.0</i>	79 <i>2.5</i>	

Virginia**Birth Defects Counts and Prevalence 2009 - 2011 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	15 <i>0.8</i>	10 <i>1.5</i>	3 <i>0.8</i>	3 <i>1.3</i>	0 <i>0.0</i>	31 <i>1.0</i>	
Pulmonary valve atresia and stenosis	171 <i>9.6</i>	98 <i>14.7</i>	60 <i>15.5</i>	43 <i>19.3</i>	1 <i>23.1</i>	374 <i>12.0</i>	
Rectal and large intestinal atresia/stenosis	72 <i>4.0</i>	27 <i>4.0</i>	23 <i>6.0</i>	8 <i>3.6</i>	0 <i>0.0</i>	131 <i>4.2</i>	
Renal agenesis/hypoplasia	63 <i>3.5</i>	31 <i>4.6</i>	13 <i>3.4</i>	4 <i>1.8</i>	0 <i>0.0</i>	114 <i>3.7</i>	
Single ventricle	24 <i>1.3</i>	12 <i>1.8</i>	2 <i>0.5</i>	1 <i>0.4</i>	0 <i>0.0</i>	39 <i>1.3</i>	
Small intestinal atresia/stenosis	64 <i>3.6</i>	26 <i>3.9</i>	15 <i>3.9</i>	6 <i>2.7</i>	0 <i>0.0</i>	114 <i>3.7</i>	
Spina bifida without anencephalus	37 <i>2.1</i>	17 <i>2.5</i>	17 <i>4.4</i>	3 <i>1.3</i>	0 <i>0.0</i>	74 <i>2.4</i>	
Tetralogy of Fallot	76 <i>4.2</i>	46 <i>6.9</i>	15 <i>3.9</i>	12 <i>5.4</i>	1 <i>23.1</i>	151 <i>4.9</i>	
Total anomalous pulmonary venous connection	18 <i>1.0</i>	2 <i>0.3</i>	5 <i>1.3</i>	5 <i>2.2</i>	0 <i>0.0</i>	30 <i>1.0</i>	
Transposition of the great arteries (TGA)	73 <i>4.1</i>	33 <i>4.9</i>	9 <i>2.3</i>	12 <i>5.4</i>	0 <i>0.0</i>	129 <i>4.2</i>	
Tricuspid valve atresia and stenosis	34 <i>1.9</i>	12 <i>1.8</i>	10 <i>2.6</i>	4 <i>1.8</i>	0 <i>0.0</i>	60 <i>1.9</i>	
Trisomy 13	10 <i>0.6</i>	3 <i>0.4</i>	5 <i>1.3</i>	1 <i>0.4</i>	1 <i>23.1</i>	20 <i>0.6</i>	
Trisomy 18	18 <i>1.0</i>	12 <i>1.8</i>	13 <i>3.4</i>	1 <i>0.4</i>	0 <i>0.0</i>	44 <i>1.4</i>	
Trisomy 21 (Down syndrome)	196 <i>10.9</i>	97 <i>14.5</i>	70 <i>18.1</i>	17 <i>7.6</i>	3 <i>69.3</i>	390 <i>12.6</i>	
Turner syndrome†	14 <i>1.6</i>	5 <i>1.5</i>	5 <i>2.6</i>	1 <i>0.9</i>	0 <i>0.0</i>	25 <i>1.7</i>	
Ventricular septal defect	790 <i>44.1</i>	287 <i>43.0</i>	239 <i>61.9</i>	109 <i>48.9</i>	10 <i>230.9</i>	1438 <i>46.3</i>	1
Total live births §	179002	66723	38628	22297	433	310438	
Male live births	92070	33893	19683	11469	220	159053	
Female live births	86927	32829	18945	10827	213	151378	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

§Total live births includes unknown gender

Virginia**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2011 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	99 3.8	1 0.2	100 3.2	
Trisomy 13	8 0.3	12 2.3	20 0.6	
Trisomy 18	18 0.7	26 5.1	44 1.4	
Trisomy 21 (Down syndrome)	211 8.2	165 32.3	390 12.6	
Total live births	258851	51126	310438	

**Total includes unknown maternal age

Notes

1.Data for this condition exclude probable cases.

General comments

-Fetal death defined as death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy.

West Virginia
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	44 5.2	0 0.0	1 9.5	0 0.0	0 0.0	46 5.0	
Anophthalmia/microphthalmia	1 0.1	0 0.0	0 0.0	0 0.0	0 0.0	1 0.1	
Anotia/microtia	3 0.4	0 0.0	0 0.0	0 0.0	0 0.0	3 0.3	
Aortic valve stenosis	15 1.8	0 0.0	0 0.0	0 0.0	0 0.0	17 1.8	
Atrial septal defect	1441 171.6	69 209.9	7 66.2	8 79.6	0 0.0	1590 172.4	
Atrioventricular septal defect (Endocardial cushion defect)	27 3.2	2 6.1	0 0.0	0 0.0	0 0.0	30 3.3	
Biliary atresia	6 0.7	1 3.0	0 0.0	0 0.0	0 0.0	8 0.9	
Bladder exstrophy	1 0.1	0 0.0	0 0.0	0 0.0	0 0.0	1 0.1	
Choanal atresia	9 1.1	1 3.0	0 0.0	0 0.0	0 0.0	12 1.3	
Cleft lip alone	1 0.1	0 0.0	0 0.0	0 0.0	0 0.0	1 0.1	
Cleft lip with cleft palate	50 6.0	1 3.0	0 0.0	0 0.0	0 0.0	53 5.7	
Cleft palate alone	71 8.5	0 0.0	0 0.0	0 0.0	0 0.0	72 7.8	
Cloacal exstrophy	28 3.3	2 6.1	0 0.0	1 10.0	0 0.0	33 3.6	
Clubfoot	170 20.2	4 12.2	1 9.5	0 0.0	0 0.0	181 19.6	
Coarctation of the aorta	43 5.1	0 0.0	0 0.0	0 0.0	0 0.0	45 4.9	
Common truncus (truncus arteriosus)	82 9.8	3 9.1	0 0.0	1 10.0	0 0.0	86 9.3	
Congenital cataract	4 0.5	0 0.0	0 0.0	1 10.0	0 0.0	5 0.5	
Congenital posterior urethral valves	3 0.4	1 3.0	0 0.0	0 0.0	0 0.0	4 0.4	
Deletion 22q11.2	2 0.2	0 0.0	0 0.0	0 0.0	0 0.0	2 0.2	
Diaphragmatic hernia	25 3.0	1 3.0	0 0.0	0 0.0	0 0.0	28 3.0	
Double outlet right ventricle	23 2.7	2 6.1	0 0.0	0 0.0	0 0.0	26 2.8	
Ebstein anomaly	16 1.9	0 0.0	0 0.0	0 0.0	0 0.0	17 1.8	
Encephalocele	3 0.4	0 0.0	0 0.0	0 0.0	0 0.0	3 0.3	
Esophageal atresia/tracheoesophageal fistula	16 1.9	2 6.1	0 0.0	0 0.0	0 0.0	21 2.3	
Gastroschisis	4 2.4	0 0.0	0 0.0	0 0.0	0 0.0	4 2.2	1
Holoprosencephaly	42 5.0	0 0.0	0 0.0	0 0.0	0 0.0	46 5.0	
Hypoplastic left heart syndrome	16 1.9	2 6.1	0 0.0	0 0.0	0 0.0	21 2.3	
Hypospadias*	242 56.7	10 59.2	0 0.0	0 0.0	0 0.0	257 54.7	
Interrupted aortic arch	6 0.7	1 3.0	0 0.0	0 0.0	0 0.0	7 0.8	
Limb deficiencies (reduction defects)	15 1.8	1 3.0	0 0.0	0 0.0	0 0.0	17 1.8	

West Virginia
Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	3 <i>1.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>1.6</i>	1
Pulmonary valve atresia and stenosis	55 <i>6.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>10.0</i>	0 <i>0.0</i>	60 <i>6.5</i>	
Pulmonary valve atresia	11 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	11 <i>1.2</i>	
Rectal and large intestinal atresia/stenosis	42 <i>5.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	42 <i>4.6</i>	
Renal agenesis/hypoplasia	40 <i>4.8</i>	1 <i>3.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	43 <i>4.7</i>	
Single ventricle	6 <i>0.7</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	8 <i>0.9</i>	
Small intestinal atresia/stenosis	33 <i>3.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	34 <i>3.7</i>	
Spina bifida without anencephalus	27 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>10.0</i>	0 <i>0.0</i>	29 <i>3.1</i>	
Tetralogy of Fallot	37 <i>4.4</i>	2 <i>6.1</i>	1 <i>9.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	44 <i>4.8</i>	
Total anomalous pulmonary venous connection	7 <i>0.8</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>10.0</i>	0 <i>0.0</i>	8 <i>0.9</i>	
Transposition of the great arteries (TGA)	27 <i>3.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	29 <i>3.1</i>	
Dextro-transposition of great arteries (d-TGA)	25 <i>3.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	25 <i>2.7</i>	
Tricuspid valve atresia and stenosis	5 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.5</i>	
Trisomy 13	5 <i>0.6</i>	1 <i>3.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.8</i>	
Trisomy 18	13 <i>1.5</i>	2 <i>6.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	15 <i>1.6</i>	
Trisomy 21 (Down syndrome)	60 <i>7.1</i>	3 <i>9.1</i>	1 <i>9.5</i>	1 <i>10.0</i>	0 <i>0.0</i>	74 <i>8.0</i>	
Turner syndrome†	1 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	3 <i>0.7</i>	
Ventricular septal defect	333 <i>39.7</i>	12 <i>36.5</i>	0 <i>0.0</i>	3 <i>29.9</i>	0 <i>0.0</i>	372 <i>40.3</i>	
Total live births	83974	3287	1058	1005	86	92246	
Male live births	42694	1690	536	508	40	46943	
Female live births	41280	1597	522	497	46	45303	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

West Virginia**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	4 <i>2.4</i>	0 <i>0.0</i>	4 <i>2.2</i>	1
Trisomy 13	6 <i>0.7</i>	0 <i>0.0</i>	7 <i>0.8</i>	
Trisomy 18	10 <i>1.2</i>	5 <i>5.6</i>	15 <i>1.6</i>	
Trisomy 21 (Down syndrome)	41 <i>4.9</i>	20 <i>22.4</i>	74 <i>8.0</i>	
Total live births	83264	8936	92246	

**Total includes unknown maternal age

Notes

1.Data for this condition begin in 2013.

General comments

-Probable cases are included.

Wisconsin**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	22 <i>0.9</i>	3 <i>0.9</i>	4 <i>1.3</i>	3 <i>2.1</i>	2 <i>4.6</i>	34 <i>1.1</i>	
Anophthalmia/microphthalmia	9 <i>0.4</i>	0 <i>0.0</i>	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	10 <i>0.3</i>	
Anotia/microtia	16 <i>0.7</i>	2 <i>0.6</i>	9 <i>2.8</i>	1 <i>0.7</i>	1 <i>2.3</i>	30 <i>0.9</i>	
Aortic valve stenosis	18 <i>0.8</i>	3 <i>0.9</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.3</i>	22 <i>0.7</i>	
Atrial septal defect	1128 <i>48.5</i>	149 <i>46.5</i>	153 <i>47.8</i>	57 <i>39.1</i>	38 <i>88.3</i>	1543 <i>48.2</i>	
Atrioventricular septal defect (Endocardial cushion defect)	45 <i>1.9</i>	4 <i>1.2</i>	6 <i>1.9</i>	2 <i>1.4</i>	0 <i>0.0</i>	59 <i>1.8</i>	
Biliary atresia	2 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.1</i>	
Bladder exstrophy	5 <i>0.2</i>	0 <i>0.0</i>	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.2</i>	
Choanal atresia	29 <i>1.2</i>	1 <i>0.3</i>	4 <i>1.3</i>	2 <i>1.4</i>	0 <i>0.0</i>	37 <i>1.2</i>	
Cleft lip alone	68 <i>2.9</i>	5 <i>1.6</i>	7 <i>2.2</i>	5 <i>3.4</i>	0 <i>0.0</i>	85 <i>2.7</i>	
Cleft lip with cleft palate	50 <i>2.1</i>	8 <i>2.5</i>	9 <i>2.8</i>	4 <i>2.7</i>	0 <i>0.0</i>	71 <i>2.2</i>	
Cleft palate alone	131 <i>5.6</i>	9 <i>2.8</i>	15 <i>4.7</i>	10 <i>6.9</i>	4 <i>9.3</i>	172 <i>5.4</i>	
Cloacal exstrophy	91 <i>3.9</i>	14 <i>4.4</i>	12 <i>3.8</i>	8 <i>5.5</i>	0 <i>0.0</i>	126 <i>3.9</i>	
Clubfoot	373 <i>16.0</i>	36 <i>11.2</i>	35 <i>10.9</i>	10 <i>6.9</i>	5 <i>11.6</i>	468 <i>14.6</i>	
Coarctation of the aorta	70 <i>3.0</i>	9 <i>2.8</i>	8 <i>2.5</i>	1 <i>0.7</i>	1 <i>2.3</i>	90 <i>2.8</i>	
Common truncus (truncus arteriosus)	5 <i>0.2</i>	0 <i>0.0</i>	2 <i>0.6</i>	0 <i>0.0</i>	0 <i>0.0</i>	7 <i>0.2</i>	
Congenital cataract	15 <i>0.6</i>	1 <i>0.3</i>	5 <i>1.6</i>	0 <i>0.0</i>	1 <i>2.3</i>	23 <i>0.7</i>	
Congenital posterior urethral valves	12 <i>0.5</i>	3 <i>0.9</i>	1 <i>0.3</i>	3 <i>2.1</i>	2 <i>4.6</i>	21 <i>0.7</i>	
Craniosynostosis	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	
Deletion 22q11.2	2 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	2 <i>0.1</i>	
Diaphragmatic hernia	52 <i>2.2</i>	3 <i>0.9</i>	6 <i>1.9</i>	1 <i>0.7</i>	2 <i>4.6</i>	64 <i>2.0</i>	
Double outlet right ventricle	21 <i>0.9</i>	4 <i>1.2</i>	4 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	30 <i>0.9</i>	
Ebstein anomaly	12 <i>0.5</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.7</i>	1 <i>2.3</i>	15 <i>0.5</i>	
Encephalocele	7 <i>0.3</i>	0 <i>0.0</i>	2 <i>0.6</i>	1 <i>0.7</i>	0 <i>0.0</i>	11 <i>0.3</i>	
Esophageal atresia/tracheoesophageal fistula	45 <i>1.9</i>	6 <i>1.9</i>	5 <i>1.6</i>	3 <i>2.1</i>	0 <i>0.0</i>	61 <i>1.9</i>	
Holoprosencephaly	57 <i>2.4</i>	9 <i>2.8</i>	6 <i>1.9</i>	3 <i>2.1</i>	1 <i>2.3</i>	81 <i>2.5</i>	
Hypoplastic left heart syndrome	25 <i>1.1</i>	6 <i>1.9</i>	2 <i>0.6</i>	0 <i>0.0</i>	1 <i>2.3</i>	34 <i>1.1</i>	
Hypospadias*	915 <i>76.6</i>	113 <i>69.7</i>	62 <i>38.1</i>	27 <i>35.9</i>	8 <i>35.9</i>	1137 <i>69.4</i>	
Interrupted aortic arch	8 <i>0.3</i>	1 <i>0.3</i>	0 <i>0.0</i>	2 <i>1.4</i>	1 <i>2.3</i>	12 <i>0.4</i>	
Limb deficiencies (reduction defects)	76 <i>3.3</i>	9 <i>2.8</i>	10 <i>3.1</i>	5 <i>3.4</i>	2 <i>4.6</i>	102 <i>3.2</i>	

Wisconsin**Birth Defects Counts and Prevalence 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Pulmonary valve atresia and stenosis	44 <i>1.9</i>	11 <i>3.4</i>	5 <i>1.6</i>	2 <i>1.4</i>	1 <i>2.3</i>	63 <i>2.0</i>	
Pulmonary valve atresia	4 <i>0.2</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>0.7</i>	0 <i>0.0</i>	5 <i>0.2</i>	
Rectal and large intestinal atresia/stenosis	72 <i>3.1</i>	5 <i>1.6</i>	8 <i>2.5</i>	5 <i>3.4</i>	2 <i>4.6</i>	96 <i>3.0</i>	
Renal agenesis/hypoplasia	131 <i>5.6</i>	10 <i>3.1</i>	8 <i>2.5</i>	4 <i>2.7</i>	0 <i>0.0</i>	154 <i>4.8</i>	
Single ventricle	2 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	1 <i>2.3</i>	3 <i>0.1</i>	
Small intestinal atresia/stenosis	71 <i>3.1</i>	12 <i>3.7</i>	11 <i>3.4</i>	6 <i>4.1</i>	5 <i>11.6</i>	105 <i>3.3</i>	
Spina bifida without anencephalus	58 <i>2.5</i>	9 <i>2.8</i>	12 <i>3.8</i>	3 <i>2.1</i>	1 <i>2.3</i>	83 <i>2.6</i>	
Tetralogy of Fallot	40 <i>1.7</i>	8 <i>2.5</i>	8 <i>2.5</i>	5 <i>3.4</i>	0 <i>0.0</i>	61 <i>1.9</i>	
Total anomalous pulmonary venous connection	3 <i>0.1</i>	1 <i>0.3</i>	1 <i>0.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	5 <i>0.2</i>	
Transposition of the great arteries (TGA)	32 <i>1.4</i>	2 <i>0.6</i>	5 <i>1.6</i>	0 <i>0.0</i>	2 <i>4.6</i>	43 <i>1.3</i>	
Dextro-transposition of great arteries (d-TGA)	18 <i>0.8</i>	2 <i>0.6</i>	2 <i>0.6</i>	0 <i>0.0</i>	2 <i>4.6</i>	26 <i>0.8</i>	
Tricuspid valve atresia and stenosis	5 <i>0.2</i>	0 <i>0.0</i>	1 <i>0.3</i>	1 <i>0.7</i>	0 <i>0.0</i>	7 <i>0.2</i>	
Trisomy 13	15 <i>0.6</i>	1 <i>0.3</i>	2 <i>0.6</i>	2 <i>1.4</i>	0 <i>0.0</i>	21 <i>0.7</i>	
Trisomy 18	62 <i>2.7</i>	5 <i>1.6</i>	7 <i>2.2</i>	3 <i>2.1</i>	0 <i>0.0</i>	80 <i>2.5</i>	
Trisomy 21 (Down syndrome)	259 <i>11.1</i>	22 <i>6.9</i>	49 <i>15.3</i>	22 <i>15.1</i>	4 <i>9.3</i>	358 <i>11.2</i>	
Turner syndrome†	10 <i>0.9</i>	2 <i>1.3</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	12 <i>0.8</i>	
Ventricular septal defect	596 <i>25.6</i>	69 <i>21.5</i>	110 <i>34.4</i>	37 <i>25.4</i>	15 <i>34.9</i>	833 <i>26.0</i>	
Total live births	232705	32069	31983	14571	4303	319903	
Male live births	119391	16204	16258	7522	2230	163784	
Female live births	113314	15865	15725	7049	2073	156119	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Wisconsin**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2013 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Trisomy 13	12 <i>0.4</i>	9 <i>2.2</i>	21 <i>0.7</i>	
Trisomy 18	45 <i>1.6</i>	35 <i>8.6</i>	80 <i>2.5</i>	
Trisomy 21 (Down syndrome)	184 <i>6.6</i>	174 <i>42.6</i>	358 <i>11.2</i>	
Total live births	278996	40879	319903	

**Total includes unknown maternal age

General comments

-Fetal deaths defined as 20 weeks or greater gestation.

Department of Defense
Birth Defects Counts and Prevalence 2009 - 2010.13 (Prevalence per 10,000 Live Births)

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Anencephalus	31 <i>0.8</i>	4 <i>0.5</i>	3 <i>0.4</i>	1 <i>0.3</i>	1 <i>0.9</i>	40 <i>0.7</i>	
Anophthalmia/microphthalmia	55 <i>1.3</i>	19 <i>2.3</i>	11 <i>1.6</i>	9 <i>3.1</i>	2 <i>1.9</i>	98 <i>1.6</i>	
Anotia/microtia	86 <i>2.1</i>	9 <i>1.1</i>	25 <i>3.7</i>	15 <i>5.2</i>	3 <i>2.8</i>	138 <i>2.3</i>	
Aortic valve stenosis	146 <i>3.6</i>	24 <i>3.0</i>	13 <i>1.9</i>	5 <i>1.7</i>	4 <i>3.8</i>	197 <i>3.2</i>	
Atrial septal defect	4308 <i>105.5</i>	917 <i>112.8</i>	716 <i>105.5</i>	246 <i>84.6</i>	86 <i>81.1</i>	6410 <i>104.9</i>	1
Atrioventricular septal defect (Endocardial cushion defect)	255 <i>6.2</i>	55 <i>6.8</i>	31 <i>4.6</i>	12 <i>4.1</i>	1 <i>0.9</i>	358 <i>5.9</i>	2
Biliary atresia	37 <i>0.9</i>	16 <i>2.0</i>	12 <i>1.8</i>	2 <i>0.7</i>	2 <i>1.9</i>	70 <i>1.1</i>	
Bladder exstrophy	21 <i>0.5</i>	1 <i>0.1</i>	0 <i>0.0</i>	0 <i>0.0</i>	0 <i>0.0</i>	23 <i>0.4</i>	
Choanal atresia	104 <i>2.5</i>	19 <i>2.3</i>	18 <i>2.7</i>	5 <i>1.7</i>	2 <i>1.9</i>	152 <i>2.5</i>	
Cleft lip alone	318 <i>7.8</i>	33 <i>4.1</i>	33 <i>4.9</i>	28 <i>9.6</i>	7 <i>6.6</i>	421 <i>6.9</i>	
Cleft lip with cleft palate	346 <i>8.5</i>	44 <i>5.4</i>	45 <i>6.6</i>	28 <i>9.6</i>	9 <i>8.5</i>	480 <i>7.9</i>	
Cleft palate alone	503 <i>12.3</i>	68 <i>8.4</i>	69 <i>10.2</i>	37 <i>12.7</i>	11 <i>10.4</i>	697 <i>11.4</i>	
Cloacal exstrophy	343 <i>8.4</i>	64 <i>7.9</i>	49 <i>7.2</i>	16 <i>5.5</i>	8 <i>7.5</i>	493 <i>8.1</i>	
Clubfoot	904 <i>22.1</i>	160 <i>19.7</i>	138 <i>20.3</i>	46 <i>15.8</i>	21 <i>19.8</i>	1292 <i>21.2</i>	
Coarctation of the aorta	424 <i>10.4</i>	71 <i>8.7</i>	41 <i>6.0</i>	20 <i>6.9</i>	12 <i>11.3</i>	586 <i>9.6</i>	
Common truncus (truncus arteriosus)	96 <i>2.4</i>	17 <i>2.1</i>	9 <i>1.3</i>	7 <i>2.4</i>	1 <i>0.9</i>	133 <i>2.2</i>	
Congenital cataract	134 <i>3.3</i>	32 <i>3.9</i>	30 <i>4.4</i>	8 <i>2.8</i>	2 <i>1.9</i>	210 <i>3.4</i>	
Congenital posterior urethral valves	86 <i>2.1</i>	12 <i>1.5</i>	7 <i>1.0</i>	5 <i>1.7</i>	4 <i>3.8</i>	117 <i>1.9</i>	
Deletion 22q11.2	42 <i>1.0</i>	9 <i>1.1</i>	6 <i>0.9</i>	1 <i>0.3</i>	2 <i>1.9</i>	60 <i>1.0</i>	
Diaphragmatic hernia	179 <i>4.4</i>	41 <i>5.0</i>	29 <i>4.3</i>	14 <i>4.8</i>	7 <i>6.6</i>	273 <i>4.5</i>	
Double outlet right ventricle	129 <i>3.2</i>	26 <i>3.2</i>	22 <i>3.2</i>	11 <i>3.8</i>	1 <i>0.9</i>	193 <i>3.2</i>	
Ebstein anomaly	60 <i>1.5</i>	9 <i>1.1</i>	9 <i>1.3</i>	3 <i>1.0</i>	3 <i>2.8</i>	85 <i>1.4</i>	
Encephalocele	43 <i>1.1</i>	8 <i>1.0</i>	9 <i>1.3</i>	1 <i>0.3</i>	3 <i>2.8</i>	65 <i>1.1</i>	
Esophageal atresia/tracheoesophageal fistula	118 <i>2.9</i>	25 <i>3.1</i>	15 <i>2.2</i>	5 <i>1.7</i>	1 <i>0.9</i>	165 <i>2.7</i>	
Gastroschisis	220 <i>6.7</i>	18 <i>2.8</i>	43 <i>7.9</i>	11 <i>4.6</i>	5 <i>5.9</i>	302 <i>6.1</i>	3
Holoprosencephaly	299 <i>7.3</i>	38 <i>4.7</i>	37 <i>5.5</i>	13 <i>4.5</i>	10 <i>9.4</i>	411 <i>6.7</i>	
Hypoplastic left heart syndrome	188 <i>4.6</i>	38 <i>4.7</i>	19 <i>2.8</i>	7 <i>2.4</i>	2 <i>1.9</i>	261 <i>4.3</i>	
Hypospadias*	2358 <i>111.8</i>	415 <i>100.2</i>	261 <i>75.1</i>	137 <i>91.1</i>	58 <i>107.4</i>	3292 <i>104.7</i>	
Interrupted aortic arch	54 <i>1.3</i>	10 <i>1.2</i>	4 <i>0.6</i>	4 <i>1.4</i>	1 <i>0.9</i>	76 <i>1.2</i>	
Limb deficiencies (reduction defects)	233 <i>5.7</i>	52 <i>6.4</i>	40 <i>5.9</i>	8 <i>2.8</i>	5 <i>4.7</i>	345 <i>5.6</i>	

Department of Defense**Birth Defects Counts and Prevalence 2009 - 2010.13 (Prevalence per 10,000 Live Births)**

Defect	Maternal Race/Ethnicity					Total**	Notes
	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian or Pacific Islander, Non-Hispanic	American Indian or Alaska Native, Non-Hispanic		
Omphalocele	69 <i>2.1</i>	18 <i>2.8</i>	9 <i>1.6</i>	4 <i>1.7</i>	0 <i>0.0</i>	101 <i>2.0</i>	3
Pulmonary valve atresia and stenosis	726 <i>17.8</i>	209 <i>25.7</i>	131 <i>19.3</i>	45 <i>15.5</i>	13 <i>12.3</i>	1148 <i>18.8</i>	
Pulmonary valve atresia	114 <i>2.8</i>	29 <i>3.6</i>	17 <i>2.5</i>	7 <i>2.4</i>	0 <i>0.0</i>	170 <i>2.8</i>	
Rectal and large intestinal atresia/stenosis	267 <i>6.5</i>	39 <i>4.8</i>	34 <i>5.0</i>	23 <i>7.9</i>	4 <i>3.8</i>	374 <i>6.1</i>	
Renal agenesis/hypoplasia	271 <i>6.6</i>	52 <i>6.4</i>	48 <i>7.1</i>	22 <i>7.6</i>	5 <i>4.7</i>	406 <i>6.6</i>	
Single ventricle	122 <i>3.0</i>	28 <i>3.4</i>	15 <i>2.2</i>	5 <i>1.7</i>	1 <i>0.9</i>	176 <i>2.9</i>	
Small intestinal atresia/stenosis	227 <i>5.6</i>	62 <i>7.6</i>	37 <i>5.5</i>	13 <i>4.5</i>	5 <i>4.7</i>	350 <i>5.7</i>	
Spina bifida without anencephalus	199 <i>4.9</i>	31 <i>3.8</i>	28 <i>4.1</i>	7 <i>2.4</i>	12 <i>11.3</i>	282 <i>4.6</i>	
Tetralogy of Fallot	250 <i>6.1</i>	57 <i>7.0</i>	47 <i>6.9</i>	27 <i>9.3</i>	4 <i>3.8</i>	391 <i>6.4</i>	
Total anomalous pulmonary venous connection	55 <i>1.3</i>	19 <i>2.3</i>	13 <i>1.9</i>	5 <i>1.7</i>	0 <i>0.0</i>	95 <i>1.6</i>	
Transposition of the great arteries (TGA)	159 <i>3.9</i>	17 <i>2.1</i>	16 <i>2.4</i>	12 <i>4.1</i>	1 <i>0.9</i>	211 <i>3.5</i>	
Dextro-transposition of great arteries (d-TGA)	146 <i>3.6</i>	15 <i>1.8</i>	16 <i>2.4</i>	12 <i>4.1</i>	1 <i>0.9</i>	195 <i>3.2</i>	
Tricuspid valve atresia and stenosis	75 <i>1.8</i>	20 <i>2.5</i>	7 <i>1.0</i>	7 <i>2.4</i>	0 <i>0.0</i>	113 <i>1.8</i>	
Trisomy 13	38 <i>0.9</i>	19 <i>2.3</i>	8 <i>1.2</i>	2 <i>0.7</i>	0 <i>0.0</i>	68 <i>1.1</i>	
Trisomy 18	67 <i>1.6</i>	20 <i>2.5</i>	14 <i>2.1</i>	1 <i>0.3</i>	0 <i>0.0</i>	105 <i>1.7</i>	
Trisomy 21 (Down syndrome)	601 <i>14.7</i>	97 <i>11.9</i>	91 <i>13.4</i>	33 <i>11.4</i>	11 <i>10.4</i>	852 <i>13.9</i>	
Turner syndrome†	53 <i>2.7</i>	5 <i>1.3</i>	7 <i>2.1</i>	2 <i>1.4</i>	2 <i>3.8</i>	70 <i>2.4</i>	
Ventricular septal defect	3103 <i>76.0</i>	539 <i>66.3</i>	477 <i>70.3</i>	174 <i>59.8</i>	69 <i>65.1</i>	4443 <i>72.7</i>	4
Total live births	408404	81279	67847	29074	10604	610830	
Male live births	210899	41415	34761	15037	5400	314557	
Female live births	197505	39864	33086	14037	5204	296273	

*Hypospadias prevalence per 10,000 male live births

†Turner syndrome prevalence per 10,000 female live births

**Total includes unknown and other maternal race/ethnicity

Department of Defense**Trisomy and Gastroschisis Counts and Prevalence by Maternal Age 2009 - 2010.13 (Prevalence per 10,000 Live Births)**

Defect	Maternal Age (years)		Total**	Notes
	Less than 35	35+		
Gastroschisis	281 <i>6.5</i>	2 <i>0.4</i>	302 <i>6.1</i>	3
Trisomy 13	42 <i>0.8</i>	24 <i>4.3</i>	68 <i>1.1</i>	
Trisomy 18	66 <i>1.2</i>	34 <i>6.1</i>	105 <i>1.7</i>	
Trisomy 21 (Down syndrome)	513 <i>9.6</i>	310 <i>55.5</i>	852 <i>13.9</i>	
Total live births	532890	55831	610830	

**Total includes unknown maternal age

Notes

- 1.Data for this condition include patent foramen ovale.
- 2.Data for this condition include inlet ventricular septal defect.
- 3.Data for this condition begin in 2010.
- 4.Data for this condition include inlet ventricular septal defect and probable ventricular septal defect.

General comments

- Data for conditions include live births only
- Race/ethnicity for the Department of Defense Birth and Infant Health Registry is based on the military parent through whom the infant receives military health care benefits. This may be the infant's mother or father.

**STATE BIRTH DEFECTS SURVEILLANCE
PROGRAM DIRECTORY**

Updated August 2016

Prepared by the National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention

Acknowledgement: State birth defects program directors provided the information for the directory. Their names can be found under the 'contact' section of each state profile.

Alabama

Program status: No surveillance program

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Alaska*Alaska Birth Defects Registry (ABDR)***Purpose:** Surveillance, Research**Partner:** Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Legislators**Program status:** Currently collecting data**Start Year:** 1996**Earliest year of available data:** 1996**Organizational location:** Department of Health (Epidemiology/Environment, Maternal and Child Health)**Population covered annually:** 11,000**Statewide:** Yes**Current legislation or rule:** 7 AAC 27.012**Legislation year enacted:** 1996**Case Definition****Outcomes covered:** Selected major birth defects based on ICD-10-CM code list**Pregnancy outcome:** Livebirths (All gestational ages and birth weights)**Age:** Birth to sixth birthday**Residence:** In and out of state births to Alaska residents**Surveillance Methods****Case ascertainment:** Passive case-finding with case confirmation**Vital Records:** Birth certificates**Other state based registries:** Programs for children with special needs, Newborn hearing screening program, Genetics clinics, specialty clinics (heart, cleft lip/palate, neurodevelopmental), MIMR (FIMR), public health nursing, Alaska Dept. of Behavioral Health (AKAIMS)**Delivery Hospitals:** Reports are generated by the health information management departments, within hospitals and health care facilities, for any child encountered with a reportable ICD-10 code.**Pediatric & tertiary care hospitals:** Reports are generated by the health information management departments, within hospitals and health care facilities, for any child encountered with a reportable ICD-10 code.**Third party payers:** Medicaid databases, Indian health services**Other specialty facilities:** Genetic counseling/clinic genetic facilities**Other sources:** Physician reports, Alaska Health Information Exchange, AK AIMS (Alaska Dept. of Behavioral Health)**Case Ascertainment****Conditions warranting chart review in the newborn period:** All Codes included in the current NBDPN list of birth defects listing (see: http://www.nbdpn.org/docs/Appendix_3_1_BirthDefectsDescriptions2015.pdf) are sampled for review. Other collected conditions/codes will be sampled and reviewed based upon incoming requests and/or need.**Coding:** ICD-10-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Data Collection Methods and Storage****Data Collection:** Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)**Database collection and storage:** Access**Data Analysis****Data analysis software:** SAS, Access, R**Quality assurance:** Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Timeliness**Data use and analysis:** Routine statistical monitoring, Rates by demographic and other variables, Time trends, Needs assessment, Grant proposals, Education/public awareness**System integration****System links:** Link case finding data to final birth file**System integration:** No.**Funding****Funding source:** 20% General state funds, 80% MCH funds**Other****Web site:**<http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/abdr/default.aspx>**Surveillance reports on file:**[Http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/mchdatabook/default.aspx](http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/mchdatabook/default.aspx)**Contacts****Kit Coleman, BS****State of Alaska, Division of Public Health****3601 C Street, Suite 358****Anchorage, AK 99503****Phone: 907-269-8097****Fax: 907-269-3493****E-mail: hssbirthdefreg@alaska.gov****Jared Parrish, PhD****State of Alaska, Division of Public Health****3601 C Street, Suite 358****Anchorage, AK 99503****Phone: 907-269-8068****Fax: 907-269-3493****E-mail: hssbirthdefreg@alaska.gov**

Arizona*Arizona Birth Defects Monitoring Program (ABDMP)*

Purpose: Surveillance, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 1986

Earliest year of available data: 1986

Organizational location: Department of Health (Public Health Statistics)

Population covered annually: 87,000

Statewide: Yes

Current legislation or rule: Legislation enacted 1988; Rule effective 1991 Statute: 36-133; Rule: Arizona Administrative Code R9-4-Article 5

Legislation year enacted: 1988

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (Any gestational age or weight if a fetal death certificate was issued)

Age: Up to one year after delivery. If the nature of a defect diagnosed in the first year of life is more precisely diagnosed later in the child's life, and this information is contained in the chart at the time of our review, then the more precise diagnosis and information is used.

Residence: Arizona birth to an Arizona resident mother

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Fetal birth certificate, Hospital Discharge Database

Delivery Hospitals: Disease index or discharge index

Pediatric & tertiary care hospitals: Disease index or discharge index

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities

Other sources: Midwifery Facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All stillborn infants, All neonatal deaths, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff

Database collection and storage: Access, Oracle

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

Funding

Funding source: 17% General state funds, 20% MCH funds, 63% CDC grant

Other

Web site: <http://azdhs.gov/phs/phstats/bdr/index.htm> and azhealth.gov/birth-defects

Surveillance reports on file: Annual Reports

Additional information on file: Fact Sheets; Resources

Other comments: To contact the ABDMP email abdmp@azdhs.gov

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Arkansas*Arkansas Reproductive Health Monitoring System (ARHMS)*

Purpose: Surveillance, Research

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Legislators

Program status: Currently collecting data

Start Year: 1980

Earliest year of available data: 1980

Organizational location: University

Population covered annually: 40,000

Statewide: Yes

Current legislation or rule: Acts 1985, No. 214

Legislation year enacted: 1985

Case Definition

Outcomes covered: Major congenital malformations, 740.000-759.990, plus select others outside this range

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: Birth to second birthday

Residence: In and out of state births to Arkansas residents

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates

Delivery Hospitals: Disease index or discharge index, Obstetrics logs (i.e., labor & delivery), ICU/NICU logs or charts, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics, Reports are generated by the health information management departments, within hospitals and health care facilities, for any child encountered with a reportable ICD-9 code.

Pediatric & tertiary care hospitals: Disease index or discharge index, ICU/NICU logs or charts, Cardiac catheterization laboratories, Specialty outpatient clinics, Reports are generated by the health information management departments, within hospitals and health care facilities, for any child encountered with a reportable ICD-9 code.

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal diagnostic information

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SAS, Access, STATA

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: No

Funding

Funding source: 100% General state funds

Other

Web site: <http://arbirthdefectsresearch.uams.edu/>

Surveillance reports on file: Online data query system available through the Arkansas Department of Health:
<http://www.healthy.arkansas.gov/programsServices/healthStatistics/Pages/Statistics.aspx>

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California*California Birth Defects Monitoring Program (CBDMP)*

Purpose: Surveillance, Research

Partner: Local Health Departments, Hospitals, Universities

Program status: Currently collecting data

Start Year: 1983

Earliest year of available data: 1983

Organizational location: Department of Health (Genetic Disease Screening Program, Center for Family Health)

Population covered annually: 70,000

Statewide: No, CBDMP currently monitors a sampling of California births that are demographically similar to the state as a whole and whose birth defects rates and trends have been reflective of those throughout California. Furthermore, CBDMP has statutory authority to conduct active surveillance anywhere in the state when warranted by environmental incidents or concerns.

Current legislation or rule: California Health and Safety Code, Division 102, Part 2, Chapter 1, Sections 103825-103855, effective 1982, recodified 1996

Legislation year enacted: 1982

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: One year

Residence: In-state births to residents of counties monitored by CBDMP

Surveillance Methods

Case ascertainment: Active Case Finding

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Laboratory logs, Cardiac catheterization laboratories

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected procedure codes, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All stillborn infants, All neonatal deaths, All elective abortions, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, GI condition (e.g. intestinal blockage), Cardiovascular condition, All infant deaths (excluding prematurity), Ocular conditions, Any infant with a codable defect

Coding: CDC BPA codes but modified for use in California

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: SQL server

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Validity checks are done on all abstracts

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Capture-recapture analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Grant proposals, Education/public awareness

System integration

System links: Link case finding data to final birth file, Hospital discharge. CBDMP links case finding data to final vital statistics fetal death files

Funding

Funding source: 100% CBDMP Special Fund

Web site: www.cdph.ca.gov/programs/CBDMP

Surveillance reports on file: Birth defect fact sheets and California regional birth defect data available on the website.

Additional information on file: Please send inquiries to mchinet@cdph.ca.gov

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Centers for Disease Control and Prevention (Metropolitan Atlanta Congenital Defects Program)*Metropolitan Atlanta Congenital Defects Program (MACDP)*

Purpose: Surveillance, Research

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Laboratories, Prenatal Diagnostic Providers

Program status: Currently collecting data

Start Year: 1967

Earliest year of available data: 1968

Organizational location: CDC, National Center on Birth Defects and Developmental Disabilities

Population covered annually: 35,000

Statewide: No, Births to mothers residing within one of three central counties in the metropolitan Atlanta area of the state of Georgia

Case Definition

Outcomes covered: All major structural and genetic birth defects

Pregnancy outcome: Livebirths (≥ 20 weeks), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (All gestational ages)

Age: Before 6 years of age

Residence: Births to mothers residing in one of three central metropolitan Atlanta counties

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Fetal birth certificate

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Induction logs and miscarriage logs

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with a CDC/BPA code, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, Infants with low birth weight or low gestation (Birth weight < 2500 grams and/or 20-36 weeks gestation), All stillborn infants, All neonatal deaths, All elective abortions, All infants with low APGAR scores, All infants in NICU or special care nursery, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), Cardiovascular condition, All infant deaths (excluding prematurity), Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access, SQL Server, SAS

Data Analysis

Data analysis software: SPSS, SAS, Access

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Education/public awareness, Prevention projects, Survival analysis

System integration

System links: Link case finding data to final birth file, National Death Index; Death and Fetal Death Records; Laboratory Records

Funding

Funding source: 100% Intramural CDC funding

Web site: <http://www.cdc.gov/ncbddd/bd/macdp.htm>

Surveillance reports on file: MACDP 40th Anniversary Surveillance Report

Additional information on file: CDC/BPA Defect Code; Including prenatal diagnoses in BD monitoring

Comments: The 40th Anniversary Surveillance Report was published: Correa A, Cragan JD, Kucik JE, et al. Reporting birth defects surveillance data 1968-2003. Birth Defects Research Part A. 2007;79(2):65-186.

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Colorado*Colorado Responds to Children with Special Needs Section (CRCSN)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 1988

Earliest year of available data: 1989

Organizational location: Department of Health (Vital Statistics, Center for Health and Environmental Data (CHED))

Population covered annually: 66,545 (2015)

Statewide: Yes

Current legislation or rule: Colorado Revised Statutes (CRS) 25-1.5-101.25-1.5-105

Legislation year enacted: 1985

Case Definition

Outcomes covered: Structural birth defects, fetal alcohol syndrome, selected genetic and metabolic disorders; muscular dystrophy; selected developmental disabilities; very low birth weight (less than 1500 grams); others with medical risk factors for developmental delay.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages, Less than 20 weeks gestation, 20 weeks gestation and greater)

Age: Up to the 5th birthday (up to 10th birthday for fetal alcohol syndrome)

Residence: Events occurring in-state- or out-of-state Colorado residents

Surveillance Methods

Case ascertainment: Active Case Finding, Passive case-finding with case confirmation

Vital Records: Birth certificates, Death certificates, Fetal birth certificate

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Postmortem/pathology logs, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Postmortem/pathology logs, Specialty outpatient clinics

Third party payers: Medicaid databases

Other specialty facilities: Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: All stillborn infants, Selected chart reviews for prenatal to age 3: for statistical trends monitoring (23 conditions-categories); fetal alcohol syndrome (to age 10), active case ascertainment data sources

Coding: ICD-9-CM, Extended code utilized to describe syndromes, further detail of a condition and to specify status.

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Gravidity/parity, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), 99% of data are collected in electronic format

Data Analysis

Data analysis software: Epi-Info, SAS, Access, Arcview (GIS software); Maptitude, SaTScan, Centrus

Quality assurance: Re-abstraction of cases, Comparison/verification between multiple data sources, Clinical review, Timeliness, Records linkage and de-duplication

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Referral, Grant proposals, Education/public awareness, Prevention projects, Environmental Studies

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Link to environmental databases

Funding

Funding source: 26% General state funds, 30% Service fees, 43% CDC grant

Other

Web site: <http://www.cdphe.state.co.us>

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Connecticut*Connecticut Birth Defects Registry (CT BDR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Reporting for MCH Block Grant

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 2002

Earliest year of available data: 2000

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 37,000

Statewide: Yes

Current legislation or rule: Sec. 19a-53. (Formerly Sec. 19-21). Reports of physical defects of children. Sec. 19a-54. (Formerly Sec. 19-21a). Registration of physically handicapped children. Sec. 19a-56a birth defects data. (Formerly Sec. 10a-132b). Birth defects surveillance program. Sec. 19a-56b (formerly Sec. 10a-132d). Confidentiality of birth defects information. Access.

Case Definition

Outcomes covered: All major structural birth defects; biochemical, genetic and hearing impairment through linkage with Newborn Screening System; any condition which places a child at risk for needing specialized medical care (i.e., complications of prematurity, cancer, trauma, etc.) ICD-9 codes 740 thru 759.9 and 760.71. ICD10 codes include the entire Q series as well as some recommended by CDC in the provided crosswalk.

Pregnancy outcome: Livebirths (All gestational ages and birth weights, PDA = to 2500 gms birth weight)

Age: Up to one year after delivery for birth defects, but reported up to age 5

Residence: All in-state births are reported but reporting is cone on in-state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation, microcephaly is currently rapid ascertainment (within 12 hours of birth) and referred to the CT DPH Infectious Disease program for follow-up.

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate, inpatient hospitalizations and emergency room visits

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Developmental Disabilities Surveillance

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Reports from health care professionals in newborn nurseries and NICUs

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, Reports from health care professionals in pediatric inpatient and outpatient services planned for future

Other sources: Midwifery Facilities, Physician reports, Mandatory reporting by health care providers and facilities; CYSHCN Programs; Newborn Screening System (for genetic disorders and hearing impairment).

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease)

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal care, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Mainframe, Web based database just moved to sequel server

Data Analysis

Data analysis software: SAS, Access, Arc GIS

Quality assurance: Validity checks, Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Epidemiologic studies (using only program data), Needs assessment, Referral, Grant proposals, Education/public awareness, Prevention projects, Provider education

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: We are integrated with the newborn metabolic and early hearing and detection intervention. Vital Records imports into the Maven Newborn Screening System (NSS). This database also links with the Lead program and the new Children and Youth with Special Health Care Needs program.

Funding

Funding source: 80% General state funds, 20% MCH funds

Other

Web site: <http://www.ct.gov/dph/birthdefectsregistry>

Surveillance reports on file: NBDPN annual reports, state profiles

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Delaware*Delaware Birth Defects Registry (DBDR)***Purpose:** Surveillance**Partner:** Local Health Departments, Hospitals, Early Childhood Prevention Programs, Birthing Centers**Program status:** Currently collecting data**Start Year:** 2007**Earliest year of available data:** 2007**Organizational location:** Department of Health (Maternal and Child Health)**Population covered annually:** 12,000**Statewide:** Yes**Current legislation or rule:** House Bill No. 197, an act to amend Title 16 of the Delaware Code relating to Birth Defects**Legislation year enacted:** 1997**Case Definition****Outcomes covered:** Selected major birth defects, selected metabolic defects, genetic diseases, and infant mortality.**Pregnancy outcome:** Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater, Or greater than 350 grams.)**Age:** Birth to 1 year**Residence:** In-state births to state resident**Surveillance Methods****Case ascertainment:** Combination of active and passive case ascertainment, Population based**Vital Records:** Birth certificates, Death certificates, Matched birth/death file**Other state based registries:** Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Developmental Disabilities Surveillance, Cancer registry, AIDS/HIV registry**Delivery Hospitals:** Disease index or discharge index, Discharge summaries, Postmortem/pathology logs, Specialty outpatient clinics, High risk pregnancy logs**Pediatric & tertiary care hospitals:** Disease index or discharge index, Discharge summaries, Postmortem/pathology logs, Specialty outpatient clinics**Other specialty facilities:** Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities**Other sources:** Midwifery Facilities, Physician reports**Case Ascertainment****Conditions warranting chart review in the newborn period:** Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All stillborn infants, All prenatal diagnosed or suspected cases**Conditions warranting chart review beyond the newborn period:** Facial dysmorphism or abnormal facies, GI condition (e.g. intestinal blockage), Cardiovascular condition, All infant deaths (excluding prematurity), Ocular conditions, Any infant with a codable defect**Coding:** CDC coding system based on BPA, ICD-9-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Data Collection Methods and Storage****Data Collection:** Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)**Database collection and storage:** Access**Data Analysis****Data analysis software:** SAS, Access**Quality assurance:** Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review**Data use and analysis:** Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Capture-recapture analyses, Epidemiologic studies (using only program data), Education/public awareness**System integration****System links:** Link to other state registries/databases, Link to Newborn Bloodspot and Hearing Screening.**Funding****Funding source:** 40% General state funds, 60% MCH funds**Other****Web site:** <http://dhss.delaware.gov/dhss/dph/chca/dphbdr1.html>**Surveillance reports on file:** Analysis of the 2007 Delaware Birth Defects Registry<http://dhss.delaware.gov/dhss/dph/chca/files/birthdefectsregistryreport2007.pdf>**Contacts****Dana R Thompson, MPH****Christiana Care Health System****4735 Ogletown Stanton Road****Newark, DE 19718****Phone: 302-733-5032****Fax: 302-733-5044****E-mail: Dana.Thompson@ChristianaCare.org**

District of Columbia

Program status: No surveillance program

Surveillance Methods

Other state based registries: Newborn hearing screening program,
Newborn metabolic screening program

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Florida*Florida Birth Defects Registry (FBDR)*

Purpose: Surveillance, Research, Educate health care professionals, women of childbearing age and general public about birth defects.

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Legislators, Federal and state agencies

Program status: Currently collecting data

Start Year: 1998

Earliest year of available data: 1998

Organizational location: Department of Health (Epidemiology/Environment), University

Population covered annually: 211,228 in 2014

Statewide: Yes

Current legislation or rule: Section 381.0031(1,2) F.S., allows for development of a list of reportable conditions. Birth defects were added to the list in July 1999.

Legislation year enacted: 1999

Case Definition

Outcomes covered: Major structural malformations and genetic disorders

Pregnancy outcome: Livebirths (20 week gestation and greater)

Age: Until age 1

Residence: Florida

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation, FL has two CDC funded cooperative agreements which use active case ascertainment which is linked to the passive surveillance program.

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Programs for children with special needs

Delivery Hospitals: Disease index or discharge index

Pediatric & tertiary care hospitals: Disease index or discharge index

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease)

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Dedicated server for birth defects data

Data Analysis

Data analysis software: SAS, Access, SQL, dBASE

Quality assurance: Validity checks, Re-abstraction of cases,

Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Capture-recapture analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Link to environmental databases, Maternal linked file.

System integration: The department has created a maternally linked file beginning with 1998. The birth defects data has been included in this linked file. Birth defects data are displayed on the department's Environmental Public Health Tracking Program site.

Funding

Funding source: 75% General state funds, 23% CDC grant, 2% Private Foundation

Web site: www.fbdr.org

Surveillance reports on file: Publications, procedure manuals, electronic case ascertainment database and educational materials

Comments: CDC/NCBDDD Cooperative Agreement for enhanced surveillance of selected birth defects, referral for services and prevention activities.

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Georgia*Georgia Birth Defects Reporting And Information System (GBDRIS)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 2003

Earliest year of available data: 2007

Organizational location: Department of Health (Epidemiology/Environment, Maternal and Child Health)

Population covered annually: 131,333 in 2015

Statewide: Yes

Current legislation or rule: Birth defects are reportable under State Laws Official Code of Georgia Annotated (OCGA) 31-12-2 and 31-1-3.2 which mandate the reporting of notifiable diseases and newborn hearing screening, and Chapters 290-5-3-.02 and 290-5-24 of the Rules of Department of Human Resources, which regulate the reporting of notifiable diseases and metabolic disorders.

Case Definition

Outcomes covered: NBDPN core and recommended birth defects plus microcephaly.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: Up to 18 years of age

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal death certificate

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Discharge summaries

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries

Other specialty facilities: Genetic counseling/clinic genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Pregnancy/delivery complications, Maternal risk factors

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Microsoft SQL Server 2012

Data Analysis

Data analysis software: SAS, Access, Microsoft SQL Server 2012

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources

Data use and analysis: Public health program evaluation, Monitoring outbreaks and cluster investigations, Service delivery, Grant proposals

System integration

System integration: We are working to integrate it with our child health data system that contains birth, genetics and intervention referrals.

Funding

Funding source: 100% MCH funds

Other

Additional information on file: In Georgia, please note that other surveillance is performed by Metropolitan Atlanta Congenital Defects Program (MACDP) and that is where the numbers for your report come from.

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Hawaii*Hawaii Birth Defects Program (HBDP)*

Purpose: Surveillance

Partner: Hospitals, Iowa Registry for Congenital and Inherited Disorders

Program status: Currently collecting data

Start Year: 1988

Earliest year of available data: 1986

Organizational location: Department of Health (Children with Special Health Needs Branch)

Population covered annually: 19,000

Statewide: Yes

Current legislation or rule: Hawaii Revised Statutes - sec. 321-421 through 426 Hawaii Revised Statutes - sec. 324-41 through 44

Legislation year enacted: 2002

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (Less than 20 weeks gestation, 20 weeks gestation and greater), Elective terminations (All gestational ages)

Age: Up to one year after delivery

Residence: All in-state births

Surveillance Methods

Case ascertainment: Active Case Finding

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease)

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, Ocular conditions, Auditory/hearing conditions, Any infant with a codable def

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Double-checking of assigned codes, Clinical review

Data use and analysis: Epidemiologic studies (using only program data)

Funding

Funding source: 100% State of Hawaii Birth Defects Special Fund

Web site: <http://health.hawaii.gov/genetics/programs/hbdhome/>

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Idaho

Program status: No surveillance program

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Illinois*Adverse Pregnancy Outcomes Reporting System (APORS)*

Purpose: Surveillance, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Community Nursing Services, Early Childhood Prevention Programs, Drug-testing laboratories; Departments of Human Services, Health and Family Services, Children and Family Services; Newborn Metabolic Screening Program,

Program status: Currently collecting data

Start Year: 1986

Earliest year of available data: 1989

Organizational location: Department of Health (Epidemiology/Environment)

Population covered annually: 155,000

Statewide: Yes

Current legislation or rule: Illinois Health and Hazardous Substances Registry Act (410 ILCS 525/) 77 Illinois Administrative Code 840

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater, or the family chose to hold a funeral)

Age: 2 years

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation, Passive case-finding without case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Discharge summaries, Reporting from all hospital nurseries

Pediatric & tertiary care hospitals: Discharge summaries, Reporting from all hospital nurseries

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All prenatal diagnosed or suspected cases, APORS collects and refers cases of neonatal deaths, infants with gestational age less than 31 weeks, infants with prenatal drug exposure (excluding marijuana), serious congenital infections, endocrine, metabolic and immune disorders, hemoglobinopathies, coagulation defects, leukemia, intrauterine growth restriction, seizures, conditions leading to more than 72 hours on a ventilator, and selected other conditions. Only charts with reported selected birth defects are reviewed.

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal care

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Purpose-built system linked with Vital Record System

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: Cases are collected in a database that is a module of the Vital Record reporting system. Cases may be initiated from the birth certificate, by hospital staff or by APORS staff. Local community health agencies have access to cases in their jurisdiction for provision of case-management services. APORS cases are also included in the Illinois Healthcare and Family Services Enterprise Data Warehouse where they are available to Illinois' Department of Human Services, Department of Children and Family Services, and Department of Healthcare and Family Services staffs.

Funding

Funding source: 52% General state funds, 42% CDC grant, 6% Other federal funding (non-CDC grants)

Web site: <http://www.dph.illinois.gov/data-statistics/epidemiology/apors>

Surveillance reports on file: Birth Defects and Other Adverse Pregnancy Outcomes in Illinois 2005-2009 Trends in the Prevalence of Birth Defects in Illinois and Chicago 1989-2009

Additional information on file: QC reports, fact sheets

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Indiana*Indiana Birth Defects & Problems Registry (IBDPR)*

Purpose: Surveillance, Research, Referral to Services

Partner: Hospitals, Advocacy Groups, Universities, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 2002

Organizational location: Department of Health (Epidemiology/Environment, Maternal and Child Health, State Health Data Center)

Population covered annually: 85,000

Statewide: Yes

Current legislation or rule: IC 16-38-4-7 Rule 410 IAC 21-3

Legislation year enacted: 2001

Case Definition

Outcomes covered: ICD-9-CM Codes 740-759.9, Fetal Alcohol Spectrum Disorder (760.71), Pervasive Developmental Disorders (299.0-299.99), fetal deaths, metabolic disorders & hearing loss from newborn screening, selected neoplasms, congenital blood disorders, and certain eye disorders.

Pregnancy outcome: Livebirths (All gestational ages and birth weights)

Age: Up to 5 years (FAS); all individuals with Autism Spectrum Disorders; up to 3 years for all other birth defects

Residence: In- and out-of-state (as reported to IBDPR) births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation, Passive case-finding without case confirmation, case confirmation for hospital discharge data; w/o case confirmation for physician reporting

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Chart audits of 49 targeted birth defects

Pediatric & tertiary care hospitals: Disease index or discharge index, Chart audits of 49 targeted birth defects

Other specialty facilities: Genetic counseling/clinic genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM, and BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), ISDH Chart Auditors submit hospital chart audit information electronically through use of a laptop and a web-based portal to the Indiana State Department of Health Repository, which stores and integrates the data.

Database collection and storage: Oracle

Data Analysis

Data analysis software: SAS, Oracle and ArcView GIS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Needs assessment

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: The database is linked with birth, death, newborn hearing screening, and newborn metabolic and pulse oximetry screening data.

Funding

Funding source: 30% MCH funds, 5% Genetic screening revenues, 65% IBDPR fund obtained through birth certificate search

Other

Web site: www.birthdefects.in.gov

Surveillance reports on file: "Progress on the Implementation of IC 16-38-4-7 (Birth Problems Registry) as amended in First Regular Session 112th General Assembly (2001) Reporting Period: July 2014-June 2015" http://www.in.gov/isdh/files/IBDPR_Annual_Report_for_14_15_reportin_g_period_final_10_30_15.pdf

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Iowa*Iowa Registry for Congenital and Inherited Disorders (IRCID)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Prevention education programs

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Legislators

Program status: Currently collecting data

Start Year: 1983

Earliest year of available data: 1983

Organizational location: University

Population covered annually: 38,813 average live births per year (2009-2013)

Statewide: Yes

Current legislation or rule: Iowa Code 136A, Iowa Administrative Code 641-4.7

Case Definition

Outcomes covered: Major birth defects, muscular dystrophy, fetal deaths with and without birth defects, newborn screening disorders

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: 2 years

Residence: Maternal residence in Iowa at time of delivery

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates, Fetal death certificates, Fetal Death Evaluation Protocol

Other state based registries: Programs for children with special needs, Developmental Disabilities Surveillance, Cancer registry, Iowa Perinatal Care Program

Delivery Hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Cardiac catheterization laboratories, Specialty outpatient clinics, Collect verbatim summaries of surgical reports, diagnostic test results, consultation reports, and autopsy/surgical pathology reports.

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Cardiac catheterization laboratories, Specialty outpatient clinics, Collect verbatim summaries of surgical reports, diagnostic test results, consultation reports, and autopsy/surgical pathology reports.

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities, Maternal serum screening facilities

Other sources: Physician reports, Outpatient surgery facilities; IHA Discharge Data

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with a CDC/BPA code, Any chart with selected procedure codes, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All stillborn infants, All neonatal deaths, All elective abortions, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, Developmental delay, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, All infant deaths (excluding prematurity), Ocular conditions, Auditory/hearing conditions, Any infant with a codable defect

Coding: CDC coding system based on BPA, ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access, Oracle, PC Server

Data Analysis

Data analysis software: SAS, Access, Oracle

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Capture-recapture analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Link to environmental databases

Funding

Funding source: 100% General state funds

Other

Web site: <http://www.public-health.uiowa.edu/ircid/>

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Kansas*Kansas Birth Defects Information System (BDIS)***Purpose:** Surveillance**Partner:** Hospitals, Environmental Agencies/Organizations, Universities**Program status:** Interested in developing a surveillance program**Start Year:** 1985**Earliest year of available data:** 1985**Organizational location:** Department of Health
(Epidemiology/Environment, Maternal and Child Health, Vital Statistics)**Population covered annually:** 39,193**Statewide:** Yes**Current legislation or rule:** K.S.A. 65-1,241 through 65-1,246**Legislation year enacted:** 2004**Case Definition****Outcomes covered:** The outcome data below are available from Office of Vital Statistics. Live births and stillbirths (fetal deaths) information are used as part of the Birth Defects Information System (BDIS). Thirteen anomalies (and "other" congenital anomalies) are listed on the birth certificate and are reported, however, these are not linked to ICD-9 codes. In addition to major birth defects, low birth weight ($\leq 1,200$ grams), low Apgar scores (≤ 5 at five minutes), seizure or serious neurologic dysfunction, and significant birth injury [skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention] are also reported to BDIS.**Pregnancy outcome:** Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)**Age:** Under five years of age with a primary diagnosis of a congenital anomaly or abnormal condition**Residence:** In state and out of state births to Kansas residents and in-state births to out of state residents**Surveillance Methods****Case ascertainment:** Passive case-finding without case confirmation**Vital Records:** Birth certificates, Stillbirth (fetal death) certificates**Other state based registries:** Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program**Delivery Hospitals:** Reports**Pediatric & tertiary care hospitals:** Reports**Other sources:** Physician reports**Case Ascertainment****Coding:** ICD-9-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Infant complications, Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Family history**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Data Collection Methods and Storage****Data Collection:** Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.). In Kansas, birth defects (congenital anomalies) are collected through three data sources: live birth certificates, stillbirth (fetal death) certificates, and the congenital malformations and fetal alcohol syndrome reporting form. The live birth and stillbirth (fetal death) certificates data (congenital anomalies and abnormal conditions) contained within the Vital Statistics Integrated Information System are extracted, downloaded and transferred to BDIS. Any additional reports of congenital anomalies from physicians, hospitals and freestanding birthing centers are entered manually into BDIS.**Database collection and storage:** Access, SQL Server**Data Analysis****Data analysis software:** SAS**Quality assurance:** Office of Vital Statistics conducts verification on live birth and stillbirth (fetal death) certificate data.**Data use and analysis:** Baseline rates, Rates by demographic and other variables, Time trends, Grant proposals, Ad-hoc upon request (e.g. cluster investigations)**System integration****System links:** Link to other state registries/databases**System integration:** Our program has a link with vital statistics records. BDIS uses the same data system (WebBFH) and shares information with Children and Youth with Special Health Care Needs and Newborn metabolic screening program.**Funding****Funding source:** 100% MCH funds**Other****Web site:** http://www.kdheks.gov/bfh/birth_defects.htm**Contacts****Jamie S. Kim, MPH****Kansas Department of Health and Environment****1000 SW Jackson, Suite 220****Topeka, Kansas 66612-1274****Phone: 785-296-6467****Fax: 785-296-6553****E-mail: jkim@kdheks.gov****Jamey D. Kendall, BSN****Kansas Department of Health and Environment****1000 SW Jackson, Suite 220****Topeka, Kansas 66612-1274****Phone: 785-291-3363****Fax: 785-296-6553****E-mail: jkendall@kdheks.gov**

Kentucky*Kentucky Birth Surveillance Registry (KBSR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Genetic Clinics, Laboratories,

Program status: Currently collecting data

Start Year: 1998

Earliest year of available data: 1998

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 56,000

Statewide: Yes

Current legislation or rule: Kentucky Revised Statute 211.660 Kentucky birth surveillance registry - Department's authority to promulgate administrative regulations. Effective: July 15, 2002

Legislation year enacted: 2002

Case Definition

Outcomes covered: KBSR collects information concerning birth defects, stillbirths, and high-risk conditions for Kentucky residents birth to age five. Diagnoses include the following ICD-9 codes: • All congenital anomalies codes - 740-759 • Dwarfism not elsewhere classified - 259.4 • Metabolic/storage disorders - 270-279, Excluding codes 274, 276 and 278. • Hereditary hemolytic anemia - 282. • Neurologic disorders of brain and spinal cord - 334-335. • Cerebral palsy - 343. • Teratogens (noxious influences) - 760.7 and all subcategories, from 760.70 to 760.79. • Infant of diabetic mother - 775.0. • Failure to thrive - 783.4. • Small for gestational age - 764.0 • Neonatal Abstinence Syndrome – 760.79 • Fetal Alcohol Syndrome – 760.71

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (A fetal death of twenty (20) completed weeks' gestation or more, calculated from the date last normal menstrual period began to the date of delivery)

Age: Up to 5 years of age

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Newborn CCHD Screening

Delivery Hospitals: Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Surgery logs, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Surgery logs, Laboratory logs, Specialty outpatient clinics

Other specialty facilities: Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Online database developed in-house

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Epidemiologic studies (using only program data), Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: Birth records from vitals statistics are linked with all cases in the KBSR database. Data from the state Newborn CCHD Screening database and the state Neonatal Abstinence Syndrome surveillance system are incorporated into KBSR.

Funding

Funding source: 100% CDC grant

Web site: <http://chfs.ky.gov/dph/mch/ecd/kbsr.htm>

Surveillance reports on file: Birth Defect Specific Fact Sheets; Contact of Partners

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Louisiana*Louisiana Birth Defects Monitoring Network (LBDMN)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 2005

Earliest year of available data: 2005

Organizational location: Department of Health (LDH/OPH/CCPH/BFH/Title V CYSHCN Programs)

Population covered annually: 62,000

Statewide: Yes

Current legislation or rule: Law: LA R.S. 40:31.41 - 40:31.48, 2001. DHH Rule: LAC 48:V. Chapters 161 and 163

Legislation year enacted: 2001

Case Definition

Outcomes covered: Major structural birth defects and selected genetic conditions

Pregnancy outcome: Livebirths (greater than or equal to 20 weeks gestation or greater than or equal to 350 grams)

Age: Up to third date of birth

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding, Combination of active and passive case ascertainment, population based

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Delivery Hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Specialty outpatient clinics

Other sources: Louisiana Hospital Inpatient Discharge Data (LAHIDD)

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any chart with selected ICD-10 Q codes, N13.1-N13.4; E78.71-E78.72.

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA, ICD-9-CM, ICD-10

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Custom built web-based database.

Data Analysis

Data analysis software: SAS, ArcGIS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link case finding data to final birth file, Link case finding data to final death file

System integration: Integrated with Louisiana Electronic Event Registration System (LEERS) birth and death records.

Funding

Funding source: MCH Title V Block Grant State Matching Funds

Other

Web site: www.dhh.la.gov/lbdrm

Surveillance reports on file: Louisiana Morbidity Report, May-June 2009, Vol 20, No 3; Results from 2006-2008 Birth Defects Surveillance System; 2013 Annual NBDPN Data Report; Presentations of analysis using 2006-2008 data concerning ASD Reporting; Cleft Lip/Palate and Hearing Loss; and Age and Racial Disparities.

Additional information on file: Advisory Board Documentation <http://www.prd.doa.louisiana.gov/boardsandcommissions/viewBoard.cfm?board=192>

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Maine*Maine CDC Birth Defects Program (MBDP)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Education

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, March of Dimes, New England Birth Defects Consortium, Maine Tracking Network

Program status: Currently collecting data

Start Year: 1999

Earliest year of available data: 2003

Organizational location: Department of Health (Division of Population Health/MCH Unit/CSHN)

Population covered annually: 12,593

Statewide: Yes

Current legislation or rule: 22 MRSA c. 1687

Legislation year enacted: 1999

Case Definition

Outcomes covered: Selected major birth defects: NTD, clefts, gastroschisis, omphalocele, trisomy 21, reduction deformities of upper and lower limb, hypospadias and major heart defects

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (Less than 20 weeks gestation, 20 weeks gestation and greater, Prenatally diagnosed at any gestation), Elective terminations (Prenatally diagnosed)

Age: Through age one

Residence: All in-state births to Maine residents

Surveillance Methods

Case ascertainment: Passive case ascertainment with active case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Laboratory logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities, Maternal serum screening facilities

Other sources: Midwifery Facilities, Physician reports, Children with Special Health Needs

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All stillborn infants, All infants in NICU or special care nursery, All prenatal diagnosed or suspected cases, ICD-10 codes

Conditions warranting chart review beyond the newborn period: Cardiovascular condition, Any infant with a codable defect

Coding: ICD-9-CM, ICD-10 codes

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), Electronic scanning of printed records

Database collection and storage: Oracle, Microsoft SQL Server

Data Analysis

Data analysis software: SAS, Stat-exact

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: Newborn Hearing/ Newborn Bloodspot Screening Programs

Funding

Funding source: 100% MCH funds

Other

Web site: http://www.maine.gov/dhhs/boh/cshn/birth_defects/index.html

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Maryland*Maryland Birth Defects Reporting and Information System (BDRIS)*

Purpose: Surveillance, Referral to Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 1983

Earliest year of available data: 1984

Organizational location: Department of Health (Epidemiology/Environment, Prevention and Health Promotion Administration)

Population covered annually: 75,000

Statewide: Yes

Current legislation or rule: Health-General Article, Section 18-206; Annotated Code of Maryland

Legislation year enacted: 1982

Case Definition

Outcomes covered: Selected birth defects - anencephaly, spina bifida, hydrocephaly, cleft lip, cleft palate, esophageal atresia/stenosis, rectal/anal atresia, hypospadias, reduction deformity - upper or lower limb, congenital hip dislocation, and Down syndrome until 2009, then all significant birth defects

Pregnancy outcome: Livebirths (All gestational ages and birth weights,), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater, Or ≥ 500 grams weight; reports accepted on fetal deaths < 500 grams or < 20 weeks gestation if sent to us.), Ele

Age: Newborn

Residence: All in-state births

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Sickle Cell Disease, Critical Congenital Heart Defect follow Up Program

Delivery Hospitals: Primary source: sentinel birth defects hospital report form; electronic reporting began 5/1/13

Pediatric & tertiary care hospitals: transfers from delivery hospitals, if screening not done at delivery hospital.

Other sources: Midwifery Facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: All fetal death certificates

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access, Mainframe, Visual dBASE, SAS, ASCII files; as of 5/1/13 data stored on vendor server

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Identification of potential cases for other epidemiologic studies, Service delivery, Referral, Grant proposals, Education/public awareness

System integration

System integration: As of 5/1/13, the birth defects data collection is integrated into the same electronic system in which we collect hearing and CCHD screening data.

Funding

Funding source: 100% General state funds

Other

Web site: <http://phpa.dhmdh.maryland.gov/genetics/SitePages/bdris.aspx>

Surveillance reports on file: All reports submitted to CDC

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Massachusetts*Massachusetts Birth Defects Monitoring Program (MBDMP)*

Purpose: Surveillance, Research, Public health program evaluation, assist community health assessments

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Maternal and Child Health Programs, State Lab

Program status: Currently collecting data

Start Year: 1997

Earliest year of available data: 1999

Organizational location: Department of Public Health (Bureau of Family Health and Nutrition)

Population covered annually: 73,000

Statewide: Yes

Current legislation or rule: Massachusetts General Laws, Chapter 111, Section 67E in 1963. In 2002 the Massachusetts legislature amended this statute, expanding the birth defects monitoring program. In 2009 regulations for a Congenital Anomalies Registry, 105 CMR 302.000, were promulgated.

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (≥ 20 weeks gestation or ≥ 350 grams), Unspecified non-live births (Includes elective terminations at all gestational ages and spontaneous losses <20 weeks and <350 grams).

Age: 1 year

Residence: In- and out-of-state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal death certificate

Delivery Hospitals: Disease index or discharge index, Regular nursery logs, ICU/NICU logs or charts, Postmortem/pathology logs, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Postmortem/pathology logs, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All stillborn infants, All prenatal diagnosed or suspected cases, Any birth certificate with a major birth defect box checked

Conditions warranting chart review beyond the newborn period: All infant deaths (excluding prematurity), Any infant with a codable defect

Coding: CDC coding system based on BPA, ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SAS, Access, Excel

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Identification of potential cases for other epidemiologic studies, Grant proposals, Education/public awareness, Epidemiologic studies (using program data)

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Link case finding data to open and closed birth file, as well as open and closed fetal file.

System integration: Link birth defects data to Pregnancy to Early Life Longitudinal (PELL) data system.

Funding

Funding source: 40% General state funds, 60% MCH funds

Web site: www.mass.gov/dph/birthdefects

Surveillance reports on file: Annual or bi-annual reports, 1999 through 2012

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Michigan*Michigan Birth Defects Registry (MBDR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Prevalence and mortality statistics

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Early Childhood Prevention Programs, Legislators, Outpatient Pediatrics clinics for HL7 reporting pilot

Program status: Currently collecting data

Start Year: 1992

Earliest year of available data: 1992

Organizational location: Department of Health (Vital Statistics)

Population covered annually: 112,000

Statewide: Yes

Current legislation or rule: Public Act 236 of 1988

Legislation year enacted: 1988

Case Definition

Outcomes covered: Congenital anomalies, certain infectious diseases, conditions caused by maternal exposures and other diseases of major organ systems

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks or >400 grams)

Age: Up to two years after delivery except that reporting to age 12 for FASD beginning in 2013

Residence: Michigan births regardless of residence, out of state births diagnosed or treated in Michigan regardless of residence

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate, Fetal deaths since 2004 only

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Cancer registry

Delivery Hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Specialty outpatient clinics

Third party payers: Medicaid databases

Other specialty facilities: Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Other sources: Physician reports, Pediatric Dentistry

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, All infant deaths (excluding prematurity), Childhood death

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth

measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: FoxPro

Data Analysis

Data analysis software: SPSS, SAS, Access, Fox-pro, Excel

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, CSHCS, WIC

System integration: No, data from vital records and other sources are extracted and loaded into registry as opposed to truly integrated database structures.

Funding

Funding source: 10% CDC grant

Other

Web site: http://www.michigan.gov/mdch/0,1607,7-132-2944_4670---,00.html

Additional information on file:

[Http://www.michigan.gov/mdch/0,1607,7-132-2945_5221-16665--,00.html](http://www.michigan.gov/mdch/0,1607,7-132-2945_5221-16665--,00.html)

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Minnesota*Minnesota Birth Defects Information System (BDIS)*

Purpose: Surveillance, Research, Referral to Services, Targeted prevention to higher risk populations.

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 2005

Earliest year of available data: 2006

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 70,000

Statewide: No, Currently covering about 95% of live births in MN. Statewide surveillance is expected to be completed by the end of 2016. Coverage is complete for smaller regions of the state. Prevalence estimates from 2006-2010 are available for the two largest counties in Minnesota, Hennepin and Ramsey counties, which account for just over 40% of MN births. For 2011 births, coverage expanded to complete in the 7-county metro area.

Current legislation or rule: MS 144.2215-2219

Legislation year enacted: 2004

Case Definition

Outcomes covered: Major structural and genetic defects diagnosed up to 1 year of age identified by CDC and NBDPN.

Pregnancy outcome: Livebirths (All gestational ages and birth weights)

Age: Up to 1 year after delivery

Residence: In-state and out of state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, Specialty outpatient clinics

Third party payers: In 2017, Medicaid databases will become available.

Other sources: Statewide de-identified hospital discharge dataset

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any birth certificate with a birth defect box checked, All deaths prior to age 2 with a birth defect indicated as cause of death on death certificates, starting with 2009 births

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Family history

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), Remote access to medical records in two health systems and five facilities as of May 20016

Database collection and storage: Web-based department-wide integrated disease surveillance database. Maven platform by Consilience Software.

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Identification of potential cases for other epidemiologic studies, Needs assessment, Referral, Education/public awareness, Prevention projects, Collaboration with Environmental Public Health Tracking Program

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Sharing of confirmed cases with key contacts at local public health agencies for service referral. LPH staff can log on to our the birth defects database to view relevant

System integration: The Birth Defects Information System (BDIS) is integrated with Newborn Hearing program and Heritable Conditions. The databases share a model on the same platform, but they are managed separately. (This platform, Maven by Consilience Software, is also used by many infectious disease surveillance systems in MN and access is limited by disease/user role.) Additional integration with the Newborn Screening program will take place in 2014 as universal newborn CCHD screening is implemented.

Funding

Funding source: 90% General state funds, 10% CDC grant

Other

Web site:

<http://www.health.state.mn.us/divs/cfh/program/cyshn/bdmaintro.cfm>

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Mississippi*Mississippi Birth Defects Surveillance Registry***Purpose:** Surveillance**Partner:** Local Health Departments, Hospitals, Advocacy Groups, Title V Children with Special Healthcare Needs**Program status:** Currently collecting data**Start Year:** 2000**Earliest year of available data:** 2000**Organizational location:** Department of Health (Maternal and Child Health, Genetic Services Bureau)**Population covered annually:** 38,000**Statewide:** Yes**Current legislation or rule:** Section 41-21-205 of the Mississippi Code of 1972**Legislation year enacted:** 1997**Case Definition****Outcomes covered:** The infant/fetus must have a reportable structural defect, newborn screening disorder, functional or metabolic disorder, genetically determined or a defect resulting from an environmental influence during embryonic or fetal life.**Pregnancy outcome:** Livebirths, Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)**Age:** Birth to 21 years**Residence:** In and out of state births to state residents**Surveillance Methods****Case ascertainment:** Passive case-finding without case confirmation, Active case-finding for Zika related birth defects**Vital Records:** Matched birth/death file**Other state based registries:** Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program**Delivery Hospitals:** Discharge summaries**Pediatric & tertiary care hospitals:** Discharge summaries, Specialty outpatient clinics**Other specialty facilities:** Genetic counseling/clinic genetic facilities**Other sources:** Physician reports**Case Ascertainment****Conditions warranting chart review in the newborn period:** Zika related birth defects**Coding:** ICD 10**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Father:** Demographic information (race/ethnicity, sex, etc.), Family history**Data Collection Methods and Storage****Data Collection:** Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)**Database collection and storage:** Access, New web based program (in development)**Data Analysis****Data analysis software:** SPSS, SAS, Access**Quality assurance:** Validity checks, Data/hospital audits, Timeliness**Data use and analysis:** Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Epidemiologic studies (using only program data), Grant proposals, Education/public awareness**System integration****System links:** Link case finding data to final birth file, Newborn Screening Program Newborn screening program database and Early Hearing program database**Funding****Funding source:** 100% Genetic screening revenues**Other****Web site:** www.HealthyMS.com**Contacts****Alyce L. Stewart, DrPH, MPH, MCHES****Mississippi State Department of Health****570 East Woodrow Wilson Ave****Jackson, Mississippi 39215-1700****Phone: 601 576-7619****Fax: 601 576-7498****E-mail: alyce.stewart@msdh.ms.gov****Ninglong Han, MS****Mississippi State Department of Health****570 East Woodrow Wilson Ave****Jackson, Mississippi 39215-1700****Phone: 601 576-8165****Fax: 601 576-8168****E-mail: ninglong.han@msdh.ms.gov**

Missouri*Missouri Birth Defects Surveillance System*

Purpose: Surveillance, Research

Partner: Environmental Agencies/Organizations, Legislators, Missouri Critical Congenital Heart Defect testing program

Program status: Currently collecting data

Start Year: 1985

Earliest year of available data: 1980

Organizational location: Department of Health (Vital Statistics)

Population covered annually: '76000

Statewide: Yes

Case Definition

Outcomes covered: ICD-9 codes 740-759, plus genetic, metabolic, and other disorders

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater, Fetal death certificates are only source of data)

Age: Up to one year after delivery

Residence: In- and out-of-state births to state residents

Surveillance Methods

Case ascertainment: Population-based

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Delivery Hospitals: Discharge summaries

Pediatric & tertiary care hospitals: Discharge summaries, Specialty outpatient clinics

Case Ascertainment

Conditions warranting chart review in the newborn period: Missouri does not have resources to conduct confirmatory chart review for cases.

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal care, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: SAS

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Education/public awareness

System integration

System links: Link case finding data to final birth file

Funding

Funding source: 100% MCH funds

Web site: <http://health.mo.gov/data/birthdefectsregistry/index.php>

Surveillance reports on file: MO Birth Defects Report 1996-2000

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Montana*Montana Birth Outcomes Monitoring System (MBOMS)*

Program status: No surveillance program

Start Year: 1999

Earliest year of available data: 2000

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 12,000

Current legislation or rule: None

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Case Definition

Outcomes covered: Major structural birth defects, chromosomal anomalies specified in the CDC 45 reportables for births occurring in calendar years 200 through 2004. Registry suspended beginning with calendar year 2005 births due to loss of CDC funding.

Pregnancy outcome: Fetal deaths - stillbirths, spontaneous abortions, etc.
(All gestational ages)

Comments: MBOMS became inactive in 2005

Nebraska*Nebraska Birth Defect Registry***Purpose:** Surveillance, Research**Partner:** Hospitals, Universities, Early Childhood Prevention Programs, Vital Statistics, Maternal Child Health**Program status:** Currently collecting data**Start Year:** 1972**Earliest year of available data:** 1973**Organizational location:** Department of Health (Vital Statistics, Office of Epidemiology and Informatics)**Population covered annually:** 27,000**Statewide:** Yes**Current legislation or rule:** Laws 1972, LB 1203, §1, §2, §3, §4 (alternate citation: Public Health & Welfare [Codes] §71-645, §71-646, §71-647, §71-648, §71-649)**Legislation year enacted:** 1972**Case Definition****Pregnancy outcome:** Livebirths (=> 20 weeks, => 500 grams), Fetal deaths - stillbirths, spontaneous abortions, etc. (=> 20 weeks, => 500 grams)**Age:** Up to one year after delivery**Residence:** In state birth to state resident, out of state births to state residents when Out State Jurisdiction allows use of data**Surveillance Methods****Case ascertainment:** Passive case-finding without case confirmation**Vital Records:** Birth certificates, Death certificates, Fetal death certificate**Delivery Hospitals:** Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs**Pediatric & tertiary care hospitals:** Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Specialty outpatient clinics**Other specialty facilities:** Genetic counseling/clinic genetic facilities**Other sources:** Midwifery Facilities, Physician reports**Case Ascertainment****Conditions warranting chart review in the newborn period:** Any chart with an ICD-9-CM code 740-759, Any birth certificate with a birth defect box checked**Coding:** CDC coding system based on BPA**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Data Collection Methods and Storage****Data Collection:** Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)**Database collection and storage:** SQL**Data Analysis****Data analysis software:** SAS, Reports from Netsmart**Quality assurance:** Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Timeliness**Data use and analysis:** Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Grant proposals**System integration****System links:** Link to other state registries/databases**System integration:** Births, Deaths, Fetal deaths**Funding****Funding source:** 100% MCH funds**Other****Web site:**http://dhhs.ne.gov/publichealth/Pages/vitalrecords_partners.aspx**Surveillance reports on file:**[Http://dhhs.ne.gov/publichealth/Pages/ced_vs.aspx](http://dhhs.ne.gov/publichealth/Pages/ced_vs.aspx)**Contacts****Michelle Hood****NE Department of Health & Human Services****301 Centennial Mall South****Lincoln, NE 68509****Phone: 402-471-0147****Fax: 402-742-1139****E-mail: Michelle.Hood@nebraska.gov****Nila Irwin****NE Department of Health & Human Services****1033 O St Suite 130****Lincoln, NE 68509****Phone: 402-471-0354****Fax: 402-742-2388****E-mail: Nila.Irwin@nebraska.gov**

Nevada*Nevada Birth Outcomes Monitoring System (NBOMS)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Hospitals, Early Childhood Prevention Programs, Legislators, Bureau of Child, Family, & Community Wellness

Program status: Currently collecting data

Start Year: 2000

Earliest year of available data: 2005

Organizational location: Department of Health (Maternal and Child Health), State Health Division, Office of Health Statistics and Surveillance, Bureau of Health Statistics, Planning, Epidemiology and Response

Population covered annually: 35,000

Statewide: Yes

Current legislation or rule: NRS 442.300 - 442.330 - Birth Defects Registry Legislation *** Regulation = NAC 442

Legislation year enacted: 1999

Case Definition

Outcomes covered: Major birth defects and genetic diseases

Pregnancy outcome: Livebirths (20 weeks of gestation and greater with all birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (20 weeks gestation and greater)

Age: Birth to 7 years of age

Residence: In-state births

Surveillance Methods

Case ascertainment: 2011-2013 data combination of active & passive, Population-based, Hospital-based. 2014 and subsequent data passive data collection (hospital discharge data).

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate, hospital medical records, diagnostic/laboratory reports

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program, Cancer registry, AIDS/HIV registry

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Pediatric logs, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries

Other specialty facilities: Genetic counseling/clinic genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any birth certificate with a birth defect box checked

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, Developmental delay, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, Any infant with a codable defect

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Illnesses/conditions, Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff

Database collection and storage: Access

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Birth registry data is manually linked to birth defect data, but the actual databases are not linked.

System integration: No

Funding

Funding source: 100% MCH Block Grant, (Office of Public Health Informatics and Epidemiology (OPHIE) provides the statistician for data workup

Other

Surveillance reports on file:

http://dpbh.nv.gov/Programs/NBOMS/dta/Publications/Nevada_Birth_Outcomes_Monitoring_System_%28NBOMS%29_-_Publications/

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New Hampshire*New Hampshire Zika Birth Conditions Program*

Purpose: Surveillance, Referral to Services, Referral to Prevention/Intervention Services

Program status: Program has not started collecting data

Organizational location: Department of Health (Maternal and Child Health), University

Population covered annually: 12,500

Statewide: Yes

Current legislation or rule: RSA 141:J, NH Administrative Rules He-P 3012

Legislation year enacted: 2008

Case Definition

Outcomes covered: Will be determined prior to program's initiation.

Surveillance Methods

Case ascertainment: Will be determined prior to program's initiation.

Funding

Funding source: 100% CDC grant

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New Jersey*Special Child Health Services Registry (SCHS Registry)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Legislators, Neurodevelopmental Centers; Federally Qualified Health Care Centers; State Parent Advocacy Network

Program status: Currently collecting data

Start Year: 1928

Earliest year of available data: 1985

Organizational location: Department of Health (Special Child Health and Early Intervention Services)

Population covered annually: 105,000

Statewide: Yes

Current legislation or rule: NJSA 26:8-40.2 et seq., NJAC 8:20 -

Amended: 1990, 1991, 1992, 2005, Readopted: 2010, Rule Amendments Adopted: 2009; Readopted: 2010

Legislation year enacted: 1983

Case Definition

Outcomes covered: All birth defects (structural, genetic, and biochemical), all Autism Spectrum Disorders, and severe hyperbilirubinemia, are required to be reported; all special needs and any condition which places a child at risk (prematurity, asthma, developmental delay) are also reported, but not required.

Pregnancy outcome: Livebirths (All gestational ages and birth weights)

Age: Mandated reporting of birth defects diagnosed through age 5, voluntary reporting of birth defects diagnosed > age 6 and all children diagnosed with Special Needs conditions who are 22 years or younger. Autism mandated up to 22 years.

Residence: All NJ residents, in and out of state

Surveillance Methods

Case ascertainment: combination of active & passive, Population-based, with annual audits

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Autism Registry

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Specialty outpatient clinics, Quality assurance visit consisting of chart review of 3 month period

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Laboratory logs, Specialty outpatient clinics, quality assurance visit consisting of chart review of 3 month period

Third party payers: Universal billing database is used for quality assurance activities

Other specialty facilities: Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Other sources: Midwifery Facilities, Physician reports, Special Child Health Services county-based Case Management Units, parents, medical examiners, Autism diagnosticians and treatment centers

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, All neonatal deaths, All death certificates for < 3 years of age

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent

infections), Cardiovascular condition, All infant deaths (excluding prematurity), Ocular conditions, Auditory/hearing conditions, Any infant with a codable defect

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Mainframe, SAS; SQL

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness, Merge registry with birth certificate registry and the death certificate registry

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, link to hearing screening registry

System integration: Autism Registry is fully integrated. Newborns having failed Pulse Oximetry Screening are integrated with Registry. Newborn hearing screening registry provides direct report to the SCHS Registry. Metabolic screening program provides direct report to SCHS Registry. Autism Registry is included in the Registry. Special Child Health Services county-based Case Management Referral System is included in the Registry.

Funding

Funding source: 90% MCH funds, 10% CDC grant

Other

Web site: <http://www.nj.gov/health/fhs/sch/index.shtml>

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New Mexico*New Mexico Birth Defects Prevention and Surveillance System (NM BDPASS)*

Purpose: Surveillance, Referral to Prevention/Intervention Services

Partner: Hospitals

Program status: Currently collecting data

Start Year: 1995

Earliest year of available data: 1995

Organizational location: Department of Health
(Epidemiology/Environment)

Population covered annually: 28,000

Statewide: Yes

Current legislation or rule: In January 2000, birth defects became a reportable condition. These conditions must be reported to the New Mexico Department of Health's Epidemiology and Response Division. Specifically, the conditions must be reported to the Environmental Health Epidemiology Bureau.

Legislation year enacted: 2000

Case Definition

Outcomes covered: 740.0-760.01, with emphasis on 12 birth defects that are nationally consistent data and measures for the Environmental Public Health Tracking Program.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc., Elective terminations (All gestational ages)

Age: Birth through age 4

Residence: Births to New Mexico residents occurring in New Mexico.

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation for selected defects

Vital Records: Birth certificates, Death certificates, Fetal birth certificate

Delivery Hospitals: Birthing hospital reports

Pediatric & tertiary care hospitals: specialty outpatient clinics, including neurosurgery, plastic surgery, pediatric surgical specialists, prenatal diagnostic providers

Third party payers: Children's Medical Services

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period:

Cardiovascular conditions, renal agenesis/hypoplasia partial & bilateral

Conditions warranting chart review beyond the newborn period:

Cardiovascular condition

Coding: CDC coding system based on BPA, ICD-9-CM, ICD-10-CM for deaths

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Stata, version 12.1

Data Analysis

Data analysis software: Stata version 12.1

Quality assurance: Comparison/verification between multiple data sources

Data use and analysis: Routine statistical monitoring, Rates by demographic and other variables

Funding

Funding source: 100% CDC grant

Web site:

https://nmtracking.org/en/health_effects/birthdefects/about_birthdefects/

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New York*New York State Congenital Malformations Registry (CMR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Community outreach and education

Partner: Hospitals, Advocacy Groups, Universities, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 1982

Earliest year of available data: 1983

Organizational location: Department of Health
(Epidemiology/Environment)

Population covered annually: 240,000

Statewide: Yes

Current legislation or rule: Public Health Law Article 2, Title II, Section 225(5)(t) and Article 2, Title I, Section 206(1)(j): Codes, Rules and Regulations, Chapter 1, State Sanitary Code, Part 22.3

Legislation year enacted: 1982

Case Definition

Outcomes covered: Major structural, functional or biochemical abnormality determined genetically or induced during gestation. A detailed list is available upon request.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (All gestational ages, Authority to collect birth defects diagnosed during pregnancy as of 5/25/16)

Age: As of 5/25/16: 10 years for heart defects, muscular dystrophy, genetic conditions, FAS; 2 years for all other defects

Residence: In-state and out-of-state births to state residents; in-state births to non-residents; all children born in or residing in New York

Surveillance Methods

Case ascertainment: Combination of active and passive case ascertainment; population-based

Other state based registries: NYS Dept. of Health statewide hospital discharge database

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics, In regions where active surveillance is conducted.

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Laboratory logs, Cardiac catheterization laboratories, Specialty outpatient clinics, in regions where active surveillance is conducted.

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, All stillborn infants, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA, ICD-9-CM prior to 1992; both ICD-9-CM and ICD-10-CM from August 2014 onward

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Oracle

Data Analysis

Data analysis software: SAS, Access, JAVA

Quality assurance: Validity checks, Comparison/verification between multiple data sources, Data/hospital audits, Timeliness

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Grant proposals, Education/public awareness

System integration

System links: Link case finding data to final birth file, Link to environmental databases

Funding

Funding source: 13.6% General state funds, 10.2% MCH funds, 3.4% Genetic screening revenues, 50.2% CDC grant, 13.3% Other federal funding (non-CDC grants), 10% State Superfund

Web site: <http://www.health.ny.gov/birthdefects>

Surveillance reports on file: Reports for 1983 - 2008 births

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North Carolina*N.C. Birth Defects Monitoring Program (NCBDMP)*

Purpose: Surveillance, Research

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Communicable disease programs; State Laboratory for Public Health

Program status: Currently collecting data

Start Year: 1987

Earliest year of available data: 1989

Organizational location: Department of Health (State Center for Health Statistics)

Population covered annually: 120,000

Statewide: Yes

Current legislation or rule: NCGS 130A-131

Legislation year enacted: 1995

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (All gestational ages)

Age: 1 year

Residence: NC resident births, including out of state deliveries

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates, Fetal birth certificate

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), ICU/NICU logs or charts, Postmortem/pathology logs, Surgery logs, Specialty outpatient clinics,

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities

Other sources: Positive pulse oximetry screening database

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected procedure codes, Any birth certificate with a birth defect box checked, All stillborn infants, All prenatal diagnosed or suspected cases, Failed newborn pulse oximetry screen

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link case finding data to final birth file, Link to environmental databases, Early Intervention Program

Funding

Funding source: 90% General state funds, 10% MCH funds

Other

Web site: <http://www.schs.state.nc.us/units/bdmp/>

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North Dakota*North Dakota Birth Defects Monitoring System (NDBDMS)***Purpose:** Surveillance

Partner: Advocacy Groups, Universities, The North Dakota Department of Human Services

Program status: Currently collecting data

Start Year: 2002

Earliest year of available data: 1994

Organizational location: Department of Health (Maternal and Child Health, Vital Statistics, Division of Children's Special Health Services)

Population covered annually: 11,265-This data is for CY 2015.

Statewide: Yes

Current legislation or rule: North Dakota Century Code: 1. 23-41-04. Birth report of child with special health care needs made to department. Within three days after the birth in this state of a child born with a visible congenital deformity, the licensed maternity hospital or home in which the child was born, or the legally qualified physician or other person in attendance at the birth of the child outside of a maternity hospital, shall furnish the department a report concerning the child with the information required by the department. 2. 23-41-05. Birth report of child with special health care needs - Use - Confidential. The information contained in the report furnished to the department under section 23-39-04 concerning a child with a visible congenital deformity may be used by the department for the care and treatment of the child pursuant to this chapter. The report is confidential and is solely for the use of the department in the performance of its duties. The report is not open to public inspection nor considered a public record.

Legislation year enacted: 1941

Case Definition

Pregnancy outcome: Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)

Age: 12 months or within the year of birth.

Residence: In-state birth/s to state resident.

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Programs for children with special needs

Pediatric & tertiary care hospitals: Specialty outpatient clinics

Third party payers: Medicaid databases

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Mainframe, Excel and SPSS

Data Analysis

Data analysis software: SPSS, Access

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Epidemiologic studies (using only program data), Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness

System integration

System integration: No.

Funding

Funding source: 100% State System Development Initiative (SSDI)

Other

Web site: <http://www.ndhealth.gov/cshs/>

Surveillance reports on file: North Dakota Birth Defects Monitoring System Summary Report 2001-2005 North Dakota Birth Defects Monitoring System Summary Report 1995-1999

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Ohio*Ohio Connections for Children with Special Needs (OCCSN)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Ohio Collaborative to Prevent Infant Mortality, ODH Office of Health Preparedness

Program status: Currently collecting data

Start Year: 2006

Earliest year of available data: 2008

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 140,000

Statewide: Yes

Current legislation or rule: Ohio Revised Code (ORC) 3705.30-3705.36 authorizes the department to implement a statewide birth defects information system and mandates hospital reporting (2000). Ohio Administrative Code (OAC) 3701-57-01 to 3701-57-04 specifies conditions to be reported and methods for reporting (2010).

Legislation year enacted: 2000

Case Definition

Outcomes covered: Major congenital anomalies recommended by NBDPN and Ohio stakeholders

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)

Age: Up to 5 years of age

Residence: Ohio resident children up to 5 years of age

Surveillance Methods

Case ascertainment: Active Case Finding, Passive case-finding with case confirmation, Passive case-finding without case confirmation, Active case finding for microcephaly, hydrocephaly, arthrogryposis, and brain reduction abnormalities; Passive case-finding with diagnostic v

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Programs for children with special needs, Newborn screening for CCHD data system - electronic birth certificate system

Delivery Hospitals: Hospital medical records and other electronic administrative data sets

Pediatric & tertiary care hospitals: Discharge summaries, Laboratory logs, Hospital medical records and other electronic administrative data sets

Other sources: Genetics Clinic Data within some hospitals

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, ICD-9 and ICD-10 (death certificates) or named congenital anomaly

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Father: Identification information (name, address, date-of-birth, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report submitted by other agencies (hospitals, etc.), Hospital reporters upload file to secure website for integration. Small volume hospitals can manually key data into secure user interface.

Database collection and storage: SQL server. External system data methods and storage: ODBC connection with SAS. SAS import of other data sets and merge export of cohort line lists to MS Excel for follow-up.

Data Analysis

Data analysis software: SPSS, SAS, MS Excel

Quality assurance: Validity checks, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Observed vs. expected analyses, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, OCCSN data system shares common demographic file with Vital Statistics and Genetics Program data systems.

Funding

Funding source: 100% MCH funds

Other**Web site:**

<http://www.odh.ohio.gov/odhprograms/cmh/bdefects/birthdefects1.aspx>

Surveillance reports on file: 2012 Annual Report

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Oklahoma*Oklahoma Birth Defect Registry (OBDR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Data used to educate public in the Oklahoma initiative to reduce Infant Mortality

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 1992

Organizational location: Department of Health (Screening and Special Services)

Population covered annually: 52,000

Statewide: Yes

Current legislation or rule: 63 - 1-550.2

Legislation year enacted: 1992

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: 3 years after delivery

Residence: Oklahoma

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Medical Examiner's autopsy reports

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Discharge summaries, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Discharge summaries, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.)

Other sources: MFM/Neonatology Case Conference

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All stillborn infants, All neonatal deaths, All elective abortions, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Maternal risk factors, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff

Database collection and storage: Access

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Needs assessment, Service delivery, Referral, Education/public awareness, Prevention projects

System integration

System links: Link case finding data to final birth file

Funding

Funding source: 64% MCH funds, 36% CDC grant

Other

Web site:

http://www.ok.gov/health/Child_and_Family_Health/Screening_and_Special_Services/Oklahoma_Birth_Defects_Registry/

Surveillance reports on file: Yes

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Oregon*Oregon Birth Anomalies Surveillance System (BASS)***Purpose:** Surveillance**Partner:** Hospitals, Advocacy Groups, Universities**Program status:** Currently collecting data**Start Year:** 2013**Earliest year of available data:** 2008**Organizational location:** Department of Health (Maternal and Child Health Section, Center for Prevention and Health Promotion, Oregon Public Health Division, Oregon Health Authority)**Population covered annually:** 45,000**Statewide:** Yes**Current legislation or rule:** None**Case Definition****Outcomes covered:** EPHT-12 and NBDPN 12 core anomalies for surveillance and microcephaly cases.**Pregnancy outcome:** Livebirths (All gestational ages and birth weights)**Age:** 5 years**Residence:** Oregon resident births (in and out-of-state)**Surveillance Methods****Case ascertainment:** Passive case-finding without case confirmation**Vital Records:** Birth certificates**Delivery Hospitals:** Hospital Discharge Data**Pediatric & tertiary care hospitals:** Hospital Discharge Data**Third party payers:** Medicaid databases**Case Ascertainment****Coding:** ICD-9-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)**Data Collection Methods and Storage****Data Collection:** Administrative data sets: Birth Certificate, Hospital Discharge Data and Medicaid claims**Database collection and storage:** Access**Data Analysis****Data analysis software:** SPSS, Access, Link plus**Quality assurance:** Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources**Data use and analysis:** Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Observed vs. expected analyses, Epidemiologic studies (using only program data), Education/public awareness**System integration****System links:** Oregon Environmental Public Health Tracking System**Funding****Funding source:** 100% Title V funds**Other****Web site:**<http://public.health.oregon.gov/HealthyPeopleFamilies/DataReports/Pages/birth-anomalies.aspx>**Contacts****Mary Ann Evans, MS, MPH, Ph.D****Maternal and Child Health Section, Center for Prevention and Health Promotion, Oregon Public Health Division. Oregon Health Authority****800 NE Oregon St, Suite 850****Portland, OR 97232****Phone: 971-673-1499****E-mail: maryann.evans@state.or.us****Claudia Bingham, MPH****Maternal and Child Health Section, Center for Prevention and Health Promotion, Oregon Public Health Division. Oregon Health Authority****800 NE Oregon St, Suite 850****Portland, OR 97232****Phone: 971-673-0253****E-mail: claudia.w.bingham@state.or.us**

Pennsylvania*Pennsylvania Birth Defects Surveillance Database (BDSS)****Program status:*** No surveillance program**Contacts****Kelly L. Holland****PA Department of Health, Bureau of Family Health****625 Forster Street, Health & Welfare Bldg. 7th Floor East****Harrisburg, PA 17120*****Phone:* 717-783-8143*****Fax:* 717-772-0323*****E-mail:* kholland@pa.gov**

Puerto Rico*Puerto Rico Birth Defects Surveillance and Prevention System (PRBDSS)*

Purpose: Surveillance, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 1995

Earliest year of available data: 1995

Organizational location: Department of Health (Services for Children with Special Medical Needs Division)

Population covered annually: 38,000

Statewide: Yes

Current legislation or rule: Law #351

Legislation year enacted: 38246

Case Definition

Outcomes covered: Selected birth defects covered: Neural Tube defects, microcephaly, holoprocencephaly, cleft lip and/or cleft palate, anotia, microtia, anophthalmia, micropthalmia, limb defects, talipes equinovarus, gastrochisis, omphalocele, craniocleidocranial dysplasia, Trisomy 13, 18 and 21, Turner's syndrome, 22q11.2 deletion syndrome, Albinism, Jarcho-Levin syndrome, Prader Willi syndrome, major congenital heart defects, ambiguous genitalia, Hypospadias, and bladder extrophy.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (All gestational ages)

Age: Up to 6 years after delivery

Residence: In-state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs

Third party payers: Medicaid databases, Health Maintenance organizations (HMOs)

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Cardiovascular condition

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal care, Prenatal diagnostic information

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SPSS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

Funding

Funding source: 68% MCH funds, 32% CDC grant

Other**Web site:**

<http://www.salud.gov.pr/Programas/CampanaAcidoFolico/Pages/default.aspx>

Surveillance reports on file: Puerto Rico Birth Defects Annual Report 2012 and 2010

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Rhode Island*Rhode Island Birth Defects Program*

Purpose: Surveillance, Referral to Services, Referral to Prevention/Intervention Services

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Community Nursing Services, Early Childhood Prevention Programs, Families

Program status: Currently collecting data

Start Year: 2000

Earliest year of available data: 2002

Organizational location: Department of Health (Center for Health Data and Analysis)

Population covered annually: 10,800

Statewide: Yes

Current legislation or rule: Title 23, Chapter 13.3 of Rhode Island General Laws requires the development of a birth defects surveillance, reporting, and information system that will a) describe the occurrence of birth defects in children up to age five; b) detect trends of morbidity and mortality; and c) identify newborns and children with birth defects to intervene on a timely basis for treatment.

Legislation year enacted: 2003

Case Definition

Outcomes covered: All birth defects and genetic diseases

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: Birth up to 5 years

Residence: RI maternal residence

Surveillance Methods

Case ascertainment: Combination of active and passive case ascertainment

Vital Records: Birth certificates, Death certificates, Matched birth/death file

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, RI has an integrated child health information system called KIDSNET, which links data from 10 programs including: Newborn Developmental Risk

Delivery Hospitals: Discharge summaries

Pediatric & tertiary care hospitals: Discharge summaries, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities, Maternal serum screening facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, All stillborn infants, All elective abortions, All infants in NICU or special care nursery, All prenatal diagnosed or suspected cases, Chart reviews are conducted for infants born at the regional perinatal center and the 5 other maternity hospitals who were identified with an ICD-9-CM code 740-759 and 760.71, and other sentinel conditions

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, Oracle

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Epidemiologic studies (using only program data), Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, KIDSNET, hospital discharge data

System integration: Integrated into KIDSNET for web-based provider reporting

Funding

Funding source: 5% General state funds, 10% MCH funds, 85% CDC grant

Other

Web site: www.health.ri.gov/programs/birthdefects

Surveillance reports on file: 2014 Rhode Island Birth Defects Data Book

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South Carolina*South Carolina Birth Defects Program (SCBDP)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Greenwood Genetics Center (GGC)

Program status: Currently collecting data

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 57,100

Statewide: Yes

Current legislation or rule: A281, R308, H4115

Legislation year enacted: 2004

Case Definition

Outcomes covered: Central nervous system defects, eye and ear defects, cardiovascular defects, orofacial defects, gastrointestinal defects, genitourinary defects, musculoskeletal defects, and chromosomal defects

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: Up to two years of age

Residence: In-state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate, Elective termination certificates

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Postmortem/pathology logs

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Genetic counseling/clinical genetic facilities

Other sources: Physician reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All prenatal diagnosed or suspected cases

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Access, SQL Server

Data Analysis

Data analysis software: SAS, Access, Arc-GIS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Time-space cluster analyses, Needs assessment, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link case finding data to final birth file

System integration: SCBDP data is integrated with SC Vital Records.

Funding

Funding source: 100% General state funds

Other

Web site:

<http://www.scdhec.gov/Health/FamilyPlanning/DataStatistics/PregnancyBabies/Health/BirthDefects/>

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South Dakota

Program status: No surveillance program

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Tennessee*Tennessee Birth Defects Registry (TBDR)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals, Universities, Early Childhood Prevention Programs, Legislators

Program status: Currently collecting data

Start Year: 2000

Earliest year of available data: 1999

Organizational location: Department of Health (Vital Statistics, Office of Healthcare Statistics, Division of Policy Planning and Assessment)

Population covered annually: 85,000

Statewide: Yes

Current legislation or rule: TCA 68-5-506

Legislation year enacted: 2000

Case Definition

Outcomes covered: 45 major structural birth defects

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (Prior to July 1st 2010: 500 grams or more, or in the absence of weight, 22 completed weeks of gestation or more; July 1st 2010 and later: 350 gra

Age: Up to one year after delivery

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: population-based

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Newborn metabolic screening program, Hospital Discharge Data System

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Surgery logs, Laboratory logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Other sources: Midwifery Facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with selected procedure codes, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), All stillborn infants, ICD-9-CM code 760.71

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access, SQL and SAS

Data Analysis

Data analysis software: SAS, Arc-GIS

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Data/hospital audits

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Needs assessment, Education/public awareness

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

Funding

Funding source: 100% General state funds

Other

Web site: www.tn.gov/health

Surveillance reports on file: Tennessee Birth Defects Registry 2007-2012

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Texas*Texas Birth Defects Epidemiology and Surveillance Branch (TBDES)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Legislators, Researchers (NBDPN, NBDPS, ICBSR)

Program status: Currently collecting data

Start Year: 1994

Earliest year of available data: 1996

Organizational location: Department of Health (Epidemiology/Environment)

Population covered annually: 387,110 in 2013

Statewide: Yes

Current legislation or rule: Health and Safety Code, Title 2, Subtitle D, Section 1, Chapter 87

Legislation year enacted: 1993

Case Definition

Outcomes covered: All major structural birth defects and fetal alcohol syndrome.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: Up to one year after delivery and up to 6 years for FAS, special studies and childhood genetic disorders diagnosed after infancy.

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Active Case Finding, Population-based

Vital Records: Fetal death certificates for delivery year 2009 to present

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics, Genetics, stillbirths and radiology logs

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Pediatric logs, Postmortem/pathology logs, Surgery logs, Laboratory logs, Cardiac catheterization laboratories, Specialty outpatient clinics, genetics, stillbirths and radiology logs

Other sources: Midwifery Facilities, Licensed birthing centers

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Infants with low birth weight or low gestation (<34 weeks GA), All stillborn infants

Conditions warranting chart review beyond the newborn period: CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Oracle

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Clinical review, Timeliness, Re-casefinding, re-review of medical records

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Time-space cluster analyses, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link to environmental databases, link registry to vital records for demographic data, special projects linking to other files (Texas Health Data for geocodes, Newborn Screening data).

Funding

Funding source: 48% General state funds, 52% MCH funds

Other

Web site: www.dshs.state.tx.us/birthdefects/

Surveillance reports on file: See website for publication and surveillance reports

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Utah*Utah Birth Defect Network (UBDN)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services, Education

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 1994

Earliest year of available data: 1994

Organizational location: Department of Health (CSHCN)

Population covered annually: 55,000

Statewide: Yes

Current legislation or rule: Birth Defect Rule (R398-5)

Legislation year enacted: 1999

Case Definition

Outcomes covered: Major structural malformations; newborn metabolic conditions; stillbirths

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (All gestational ages), Elective terminations (All gestational ages)

Age: 2 years based on mandatory reporting

Residence: Maternal residence in Utah at time of delivery

Surveillance Methods

Case ascertainment: Combination of active and passive case ascertainment; population-based

Vital Records: Birth certificates, Death certificates, Fetal birth certificate

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program, CCHD screening program, Autism Registry

Delivery Hospitals: Disease index or discharge index, Discharge summaries, Obstetrics logs (i.e., labor & delivery), Regular nursery logs, ICU/NICU logs or charts, Postmortem/pathology logs, Specialty outpatient clinics, Champions report live births delivered at their respective hospitals

Pediatric & tertiary care hospitals: Disease index or discharge index, Discharge summaries, ICU/NICU logs or charts, Postmortem/pathology logs, Surgery logs, Cardiac catheterization laboratories, Specialty outpatient clinics

Other specialty facilities: Prenatal diagnostic facilities (ultrasound, etc.), Cytogenetic laboratories, Genetic counseling/clinical genetic facilities

Other sources: Midwifery Facilities, Physician reports, Lay midwives

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with a CDC/BPA code, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, All stillborn infants, All neonatal deaths, All infants in NICU or special care nursery, All prenatal diagnosed or suspected cases, All fetal death certificates, NICU reports, infant deaths are reviewed

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, Cardiovascular condition, All infant deaths (excluding prematurity), Childhood deaths between 1 and 6, Any infant with a codable defect

Coding: CDC coding system based on BPA

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth

measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Illnesses/conditions, Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report filled out by staff, Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff using remote access from office (laptop, web-based, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SAS, Access

Quality assurance: Validity checks, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review, Timeliness, Logical checks, duplicate check in tracking and surveillance module, case record form checked for completeness, timelin

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Time trends, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Referral, Grant proposals, Education/public awareness, Prevention projects, Oral Facial Cleft Case-Control Study, UT Center for Birth Defects Research and Prevention, International Clearinghouse for Birth Defects, Local studies

System integration

System links: Link to other state registries/databases, Link to environmental databases, Link to Utah genealogic population database, Link to vital records

System integration: The database is linked with birth, death, and pulse oximetry screening data. Newborns having failed Pulse Oximetry Screening are integrated with UBDN.

Funding

Funding source: 100% MCH funds

Other

Web site: <http://www.health.utah.gov/birthdefect>

Surveillance reports on file: [Http://ibis.health.utah.gov](http://ibis.health.utah.gov)

Additional information on file: Scientific Collaboration Protocol

Comments: IBIS indicators for specific birth defects are online.

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Vermont
Birth Information Network (BIN)

Purpose: Surveillance, Referral to Services

Partner: Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs, Hospital Association

Program status: Currently collecting data

Start Year: 2006

Earliest year of available data: 2006

Organizational location: Department of Health (Division of Health Surveillance / Statistics)

Population covered annually: 6,200

Statewide: Yes

Current legislation or rule: Act 32 (TITLE 18 VSA §5087)

Legislation year enacted: 2003

Case Definition

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 week gestation and greater or a birth weight of more than 400 grams)

Age: Up to one year after delivery

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding with case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Discharge summaries, Specialty outpatient clinics

Pediatric & tertiary care hospitals: Discharge summaries, Specialty outpatient clinics

Third party payers: Medicaid databases, Multi-payer claims database

Other specialty facilities: Cytogenetic laboratories

Other sources: Physician reports, Autopsy reports

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected procedure codes, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, Any chart with an ICD-9-CM or ICD-10-CM code corresponding to a condition monitored by Vermont's registry.

Conditions warranting chart review beyond the newborn period: Any infant with a codable defect

Coding: ICD-9-CM, ICD-10-CM

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Pregnancy/delivery complications, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: SPSS, Access, Excel

Quality assurance: Comparison/verification between multiple data sources, Data/hospital audits, Clinical review, Timeliness

Data use and analysis: Routine statistical monitoring, Public health program evaluation, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Observed vs. expected analyses, Referral, Grant proposals, Education/public awareness

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file, Link to environmental databases

Funding

Funding source: 5% General state funds, 95% CDC grant

Other

Web site: http://healthvermont.gov/tracking/health_birthdefects.aspx

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Virginia*Virginia Congenital Anomalies and Reporting Education System (VaCARES)*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Local Health Departments, Hospitals

Program status: Currently collecting data

Start Year: 1985

Earliest year of available data: 2004

Organizational location: Department of Health (Office of Family Health Services, Division of Child and Family Health)

Population covered annually: 101,000

Statewide: Yes

Current legislation or rule: Code of Virginia, § 32.1-69.1

Legislation year enacted: 1985

Case Definition

Outcomes covered: Major and non-major birth defects

Pregnancy outcome: Livebirths (All gestational ages and birth weights)

Age: Up to 2 years of age

Residence: Any diagnoses occurring in-state

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation

Vital Records: Birth certificates

Other state based registries: Newborn hearing screening program, Newborn metabolic screening program

Delivery Hospitals: Discharge summaries

Pediatric & tertiary care hospitals: Discharge summaries

Other specialty facilities: Genetic counseling/clinic genetic facilities

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease)

Coding: ICD-9-CM, ICD-10 as of October 1, 2015

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Infant complications, Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Illnesses/conditions, Prenatal care, Pregnancy/delivery complications

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.)

Database collection and storage: Oracle, Web-based reporting system is linked to electronic birth certificate and populates Oracle data tables

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks

Data use and analysis: Public health program evaluation, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Needs assessment, Referral, Grant proposals, Education/public awareness

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

System integration: VaCARES is part of the Virginia Vital Events Screening and Tracking System, which also houses electronic birth certificate reporting and the Virginia Early Hearing Detection and Intervention tracking.

Funding

Funding source: 97% MCH funds, 3% Genetic screening revenues

Web site: <http://www.vdh.virginia.gov/livewell/programs/vacares/>

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Washington*Washington State Birth Defects Surveillance System (BDSS)***Purpose:** Surveillance**Partner:** Local Health Departments, Hospitals, Environmental Agencies/Organizations, Universities**Program status:** Currently collecting data**Earliest year of available data:** 1987**Organizational location:** Department of Health (Office of Healthy Communities)**Population covered annually:** 90,000**Statewide:** Yes**Current legislation or rule:** Notifiable Conditions: WAC 246-101**Legislation year enacted:** 2000**Case Definition****Pregnancy outcome:** Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)**Age:** We ascertain cases through 1 year of age for structural defects and to age 10 for FAS/FAE, Cerebral Palsy and Autism**Residence:** Resident births; children born, diagnosed, or treated in-state**Surveillance Methods****Case ascertainment:** Passive case-finding without case confirmation**Vital Records:** Birth certificates, Matched birth/death file, Fetal birth certificate**Other state based registries:** Programs for children with special needs**Delivery Hospitals:** Disease index or discharge index**Pediatric & tertiary care hospitals:** Disease index or discharge index**Case Ascertainment****Coding:** ICD-9-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Tests and procedures, Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.)**Father:** Identification information (name, address, date-of-birth, etc.)**Data Collection Methods and Storage****Data Collection:** Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), Case-finding Log listing of all data elements required for each case are completed by Medical Records staff, sometimes in conjunction with hospital Information Systems staff. Several facilities submit print-outs from data query of internal system of discharge data. Minimal use of diskette or other forms of electronic data transfer. A web-based reporting system is currently in development.**Database collection and storage:** Web-based SQL server**Data Analysis****Data analysis software:** SAS, Stata**Quality assurance:** Validity checks, Comparison/verification between multiple data sources**Data use and analysis:** Routine statistical monitoring, Baseline rates, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Education/public awareness**System integration****System links:** Link case finding data to final birth file, CSHCN program participant file**Funding****Funding source:** 70% General state funds, 30% MCH funds**Contacts****Kevin Beck, MA****Washington Dept. of Health****PO Box 47835****Olympia, WA 98504-7835****Phone: 360-236-3492****Fax: 360-236-2323****E-mail: kevin.beck@doh.wa.gov****Riley Peters, PhD****Washington Dept. of Health; Maternal and Child Health; CSHCN****PO Box 47835****Olympia, WA 98504-7835****Phone: 360-236-3581****Fax: 360-236-2323****E-mail: riley.peters@doh.wa.gov**

West Virginia*West Virginia Birth Defects Surveillance System*

Purpose: Surveillance, Research, Referral to Services, Referral to Prevention/Intervention Services

Partner: Hospitals, Universities, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 1989

Earliest year of available data: 1989

Organizational location: Department of Health (Maternal and Child Health)

Population covered annually: 21,000

Statewide: Yes

Current legislation or rule: WV State Code 16-5-12a

Case Definition

Outcomes covered: ICD-9-CM codes 740-759, 760, 764, 765, 766 with transition to ICD-10

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater), Elective terminations (20 weeks gestation and greater)

Age: 0-6 years

Residence: In and out of state births to state residents

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation

Vital Records: Birth certificates, Death certificates, Matched birth/death file, Fetal birth certificate, Elective termination certificates

Other state based registries: Programs for children with special needs, Newborn hearing screening program, Newborn metabolic screening program, Infant and Maternal Mortality Review Panel

Delivery Hospitals: Discharge summaries

Pediatric & tertiary care hospitals: Discharge summaries

Other sources: Pediatric referrals of children not identified on birth certificate

Case Ascertainment

Conditions warranting chart review in the newborn period: Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Any chart with selected defects or medical conditions (i.e. abnormal facies, congenital heart disease), Any birth certificate with a birth defect box checked, Infants with low birth weight or low gestation (<2500 grams or <37 weeks), All stillborn infants, All neonatal deaths, All elective abortions, All infants in NICU or special care nursery

Conditions warranting chart review beyond the newborn period: Facial dysmorphism or abnormal facies, Failure to thrive, Developmental delay, CNS condition (e.g. seizure), GI condition (e.g. intestinal blockage), GU condition (e.g. recurrent infections), Cardiovascular condition, All infant deaths (excluding prematur

Coding: ICD-9-CM, transitioning to ICD-10

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Gravidity/parity, Prenatal care, Prenatal diagnostic information, Family history

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Family history

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report submitted by other agencies (hospitals, etc.)

Database collection and storage: Access

Data Analysis

Data analysis software: Access

Quality assurance: Comparison/verification between multiple data sources, Timeliness

Data use and analysis: Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Time trends, Epidemiologic studies (using only program data), Needs assessment, Service delivery, Referral, Grant proposals, Education/public awareness, Prevention projects

System integration

System links: Link to other state registries/databases, Link case finding data to final birth file

Funding

Funding source: 100% MCH funds

Other

Web site: <http://wvdhhr.org/omcfh>

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Wisconsin*Wisconsin Birth Defect Prevention and Surveillance System (WBDPSS)*

Purpose: Surveillance, Research, Referral to Services

Partner: Local Health Departments, Hospitals, Environmental Agencies/Organizations, Advocacy Groups, Universities, Early Childhood Prevention Programs

Program status: Currently collecting data

Start Year: 2004

Earliest year of available data: 2005

Organizational location: Department of Health (Maternal and Child Health, Department of Health Services, Division of Public Health)

Population covered annually: average 69,000

Statewide: Yes

Current legislation or rule: State statute 253.12 Birth defect prevention and surveillance system. Enacted December 2000. Department of Health Services rules, Chapter DHS 116 Wisconsin Birth Defect Prevention and Surveillance System. Enacted April 2003.

Legislation year enacted: 2000

Case Definition

Outcomes covered: A list of 87 specific birth defects are collected. The list may be viewed on our website at <https://www.dhs.wisconsin.gov/cyshcn/birthdefects/index.htm>. It is an appendix to the reporting form DPH 40054. The list was developed by the Scientific Committee of the Council on Birth Defect Prevention and Surveillance and is included as an appendix in the rules.

Pregnancy outcome: Livebirths (All gestational ages and birth weights), Fetal deaths - stillbirths, spontaneous abortions, etc. (20 weeks gestation and greater)

Age: Up to 2 years after delivery

Residence: All children born in and/or receiving services in the state

Surveillance Methods

Case ascertainment: Passive case-finding without case confirmation, Work with reporters who report batches from EMRs to assure reporting quality

Vital Records: Matched birth/death file, compare registry reports to vital records periodically for selected birth defects

Case Ascertainment

Coding: ICD-9-CM, State assigned codes assigned to all conditions collected. Reporters combine ICD-9-CM or ICD-10 with text searches to derive defects that share an ICD code.

Data Collected

Infant/fetus: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Birth defect diagnostic information

Mother: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Father: Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.)

Data Collection Methods and Storage

Data Collection: Printed abstract/report submitted by other agencies (hospitals, etc.), Electronic file/report filled out by staff at facility (laptop, web-based, etc.), Electronic file/report submitted by other agencies (hospitals, etc.), Can submit one report on the website or upload multiple reports. A paper form is also available that is entered by state birth defects staff.

Database collection and storage: Oracle

Data Analysis

Data analysis software: SAS

Quality assurance: Validity checks, Comparison/verification between multiple data sources

Data use and analysis: Routine statistical monitoring, Rates by demographic and other variables, Time trends, Observed vs. expected analyses, Referral, Grant proposals, Prevention projects

Funding

Funding source: 100% birth certificate fees

Web site: <https://www.dhs.wisconsin.gov/cyshcn/birthdefects/index.htm>

Surveillance reports on file: Posted on the website

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Wyoming

Program status: Interested in developing a surveillance program

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Department of Defense*United States Department of Defense (DoD) Birth and Infant Health Registry***Purpose:** Surveillance, Research**Partner:** Hospitals, Universities, Other DoD Programs**Program status:** Currently collecting data**Start Year:** 1998**Earliest year of available data:** 1998**Organizational location:** Deployment Health Research Department, Naval Health Research Center**Population covered annually:** Approximately 100,000 per year**Statewide:** No, National/Worldwide; includes all DoD beneficiaries**Current legislation or rule:** Assistant Secretary of Defense, Health Affairs Policy Memorandum**Legislation year enacted:** 1998**Case Definition****Outcomes covered:** Outcomes include those birth defects listed in the case definition of the National Birth Defects Prevention Network. For a birth defect to be represented, the diagnosis must appear at least once in an inpatient record, or at least twice on two separate dates for outpatient encounters. Same sex multiples are excluded from analysis.**Pregnancy outcome:** Livebirths (All gestational ages and birth weights)**Age:** Birth up to one year after delivery**Residence:** Worldwide; any birth to a US military beneficiary**Surveillance Methods****Case ascertainment:** Active Case Finding, Passive case-finding with case confirmation, Passive case-finding without case confirmation, Electronic diagnostic codes from all inpatient and outpatient healthcare encounters of US military beneficiaries at both civilian and military**Delivery Hospitals:** Disease index or discharge index, Discharge summaries, Specialty outpatient clinics, All inpatient and outpatient encounters at both civilian and military care facilities are captured in standardized DoD data**Pediatric & tertiary care hospitals:** Disease index or discharge index, Discharge summaries, Specialty outpatient clinics, All inpatient and outpatient encounters at both civilian and military care facilities are captured in standardized DoD data**Third party payers:** All inpatient and outpatient encounters at both civilian and military care facilities are captured in standardized DoD data**Other sources:** Validation of standardized electronic data performed by active case ascertainment and chart review of a random sample of births from military facilities**Case Ascertainment****Conditions warranting chart review in the newborn period:** Any chart with an ICD-9-CM code 740-759, Any chart with a selected list of ICD-9-CM codes outside 740-759, Validation of standardized electronic data performed by active case ascertainment and chart review of a random sample of births from military healthcare facilities**Conditions warranting chart review beyond the newborn period:** Any infant with a codable defect**Coding:** ICD-9-CM**Data Collected****Infant/fetus:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Birth measurements (weight, gestation, Apgars, etc.), Tests and procedures, Infant complications, Birth defect diagnostic information**Mother:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Illnesses/conditions, Prenatal care, Prenatal diagnostic information, Pregnancy/delivery complications**Father:** Identification information (name, address, date-of-birth, etc.), Demographic information (race/ethnicity, sex, etc.), Illnesses/conditions**Data Collection Methods and Storage****Data Collection:** Electronic file/report submitted by other agencies (hospitals, etc.)**Database collection and storage:** Access, SAS**Data Analysis****Data analysis software:** SAS**Quality assurance:** Validity checks, Re-abstraction of cases, Double-checking of assigned codes, Comparison/verification between multiple data sources, Clinical review**Data use and analysis:** Routine statistical monitoring, Baseline rates, Rates by demographic and other variables, Monitoring outbreaks and cluster investigations, Time trends, Observed vs. expected analyses, Epidemiologic studies (using only program data), Identification of potential cases for other epidemiologic studies, Grant proposals, Prevention projects, Monitor birth defect outcomes following specific parental or gestational exposures of concern**System integration****System links:** DoD databases**System integration:** DoD databases**Funding****Funding source:** 100% Other federal funding (non-CDC grants)**Other****Web site:** <http://www.med.navy.mil/sites/nhrc/Pages/Research-and-Development-Focus-Areas.aspx?Category=MILITARY-RANDDFOCUS>**Surveillance reports on file:** DoD/Health Affairs policy memorandum; annual reports**Contacts****Ava Marie S. Conlin, DO, MPH****Deployment Health Research Department, Dept 164, Naval Health Research Center****140 Sylvester Road****San Diego, CA 92106-3521****Phone: 619-553-9255****Fax: 619-767-4806****E-mail: avamarie.s.conlin.ctr@mail.mil****Gia R. Gumbs, MPH****DoD Birth and Infant Health Registry****140 Sylvester Road****San Diego, CA 92106-3521****Phone: 619-553-9255****Fax: 619-767-4806****E-mail: gia.r.gumbs.ctr@mail.mil**